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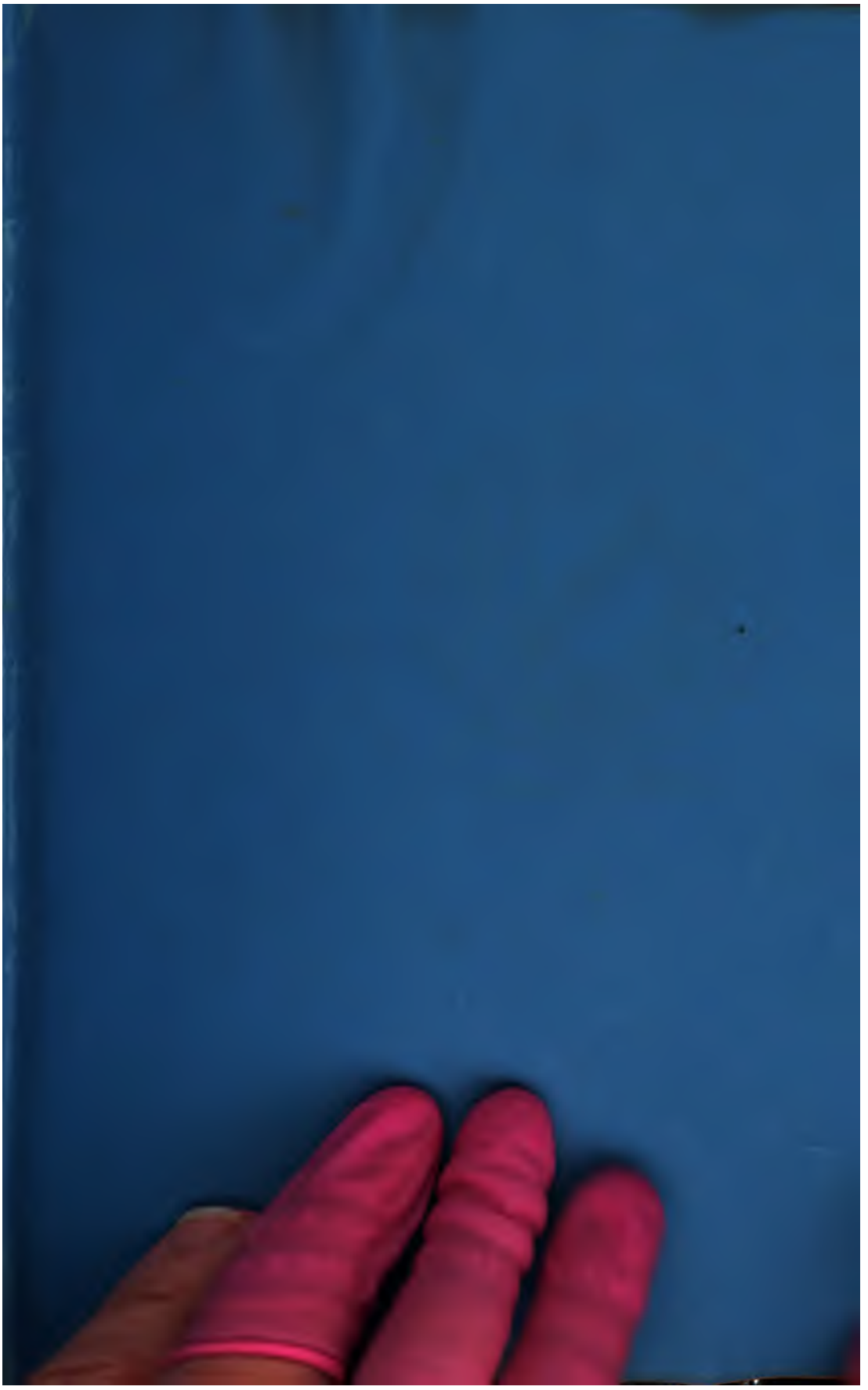

SCOTTISH

CRYPTOGAMIC FLORA,

OR

COLOURED FIGURES AND DESCRIPTIONS OF CRYPTOGAMIC PLANTS, BELONGING CHIEFLY TO THE ORDER *FUNGI;*

AND

INTENDED TO SERVE AS A CONTINUATION

OF

ENGLISH BOTANY.

BY

ROBERT K. GREVILLE, LL.D. F.R.S. & F.A.S.E.

MEMBER OF THE WERNERIAN NATURAL HISTORY SOCIETY OF EDINBURGH; OF THE IMPERIAL ACADEMY NATURÆ CURIOSORUM; OF THE NATURAL HISTORY SOCIETY OF LEIPSIC; OF THE PHYSIOGRAPHICAL SOCIETY OF LUND; CORRESPONDING MEMBER OF THE NATURAL HISTORY SOCIETY OF PARIS; OF THE ACADEMY OF NATURAL SCIENCES OF PHILADELPHIA; HONORARY MEMBER OF THE LYCEUM OF NATURAL HISTORY AT NEW YORK; OF THE YORKSHIRE PHILOSOPHICAL SOCIETY; AND OF THE LIVERPOOL INSTITUTION, &c.

Cui bono hæc omnia?—Ut cognoscamus sapientiam CREATORIS, quæ in minimis non minus elucet, quam in magnis plantis.—DILL.

VOL. III.

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1825.

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BOLETUS LURIDUS.

Red-stemmed Boletus.

CLASS AND ORDER CRYPTOGAMIA FUNGI, *Linn.*—NAT. ORD. *FUNGI*, *Link, Grev.*

GENERIC CHARACTER.

Pileus carnosus, stipite centrali. Hymenium tubulosum a pileo discretum et distinctum, tubulisque discretis connexis.

Pileus carnose, furnished with a central stipes. Hymenium tubular, of a distinct substance from the pileus; the tubes also distinct from, but in contact with each other.

SPECIFIC CHARACTER.

BOLETUS luridus; *pileo pulvinato, subtomentoso, olivaceo, dein subviscoso, fulvo-fuligineo; tubulis subliberis, rotundis, luteis, ore rubro; stipite crasso, reticulato, rubro.*—FRIES.

B. pileus very convex, slightly downy, olivaceous, at length somewhat viscid, dingy fulvous; tubes nearly free, round, yellow, the orifice red; stipes thick, reticulated, red.

BOLETUS luridus, *Schæff. Fung.* t. 107.—*Pers. Syn. Fung.* p. 512.—*Alb. et Schwein.* p. 241.—*Fries, Syst. Mycol.* v. 1. p. 391.—*Schwein. Fung. Carol.* No. 868.—*Grev. Fl. Edin.* p. 404.

BOLETUS rubeolarius, *Bull. Champ.* p. 326. t. 100. 490. f. 1.—*Pers. Syn. Fung.* p. 512.—*Sow. Fung.* t. 250.—*De Cand. Fl. Franç.* ed. 3. v. 2. p. 123. *excl syn. Schæff.* t. 105, 106.—*Ejusd. Syn.* p. 25.—*With. Bot. Arr.* ed. 6. v. 4. p. 379.—*Relh. Fl. Cantab.* ed. 3. p. 545.—*Purt. Midl. Fl.* v. 2. p. 662.

BOLETUS bovinus, *Bolt. Fung.* t. 85.

BOLETUS tuberosus, *Schum. Sæll.* p. 377.

HAB. In woods and shady places, very frequent. Autumn.

Plant large and robust. *Pileus* 3–6 inches broad, convex, thick, subtomentose, olivaceous, becoming darker and dingy in age, very juicy. *Flesh* yellowish, when cut or broken changing instantly to a blue colour. *Tubes* of the *hymenium* scarcely in contact with the stipes, $\frac{1}{2}$–$\frac{3}{4}$ of an inch long, yellow, roundish, the orifice minute, and of a fine red. *Stipes* 2–5 inches high, mostly very thick, and much incrassated towards the base, solid, yellow above, red below, and generally more or less reticulated with red veins. *Sporules* greenish-brown.

For the first illustration of the genus *Boletus*, so well defined by FRIES in his Systema Mycologicum, I have selected the finest species indigenous to this country. It is really a noble fungus, and is equally entitled to precedence among the *Boleti*, as *Amanita muscaria* among the *Agarici*. Like that species, also, *Boletus luridus* is poisonous, and was known to CÆSALPINUS, BATTARA and BUXBAUM, under the name of *Suillus perniciosus*.

Previous to the indefatigable labours of FRIES, a great number of fungi were included under *Boletus*; but the practical knowledge and physiological acuteness of that botanist has enabled him to form two genera, so beautifully defined by Nature herself, that it is wonderful they were not earlier established, I mean since Mycology has been systematically studied; for MICHELI seems to have been fully aware of the distinctive characters residing in the hymenium, and of which FRIES has not omitted to avail himself. Thus, the genus *Suillus* of MICHELI is equivalent with *Boletus* in the System of FRIES. Many of the *Polypori*, however, of the latter author, are referred by MICHELI to *Agaricus*.

The student will perceive, by referring to either of the two species of *Polyporus* published in this work, that the hymenium is formed of the same substance as the rest of the pileus, and that the pores of the hymenium are divided by a simple dissepiment from each other, so that they are strictly perforations. In the genus under consideration, on the contrary, the hymenium is capable of being separated entire from the pileus, and is moreover composed of perfect tubes, attached to each other, but capable of individual separation. The *Polypori* are mostly long-lived; the *Boleti* decay rapidly. The first are mostly sessile and dimidiate, and of a coriaceous substance; the second are always furnished with a central stipes, and are soft and juicy.

Fig. 1. *Illustrates the arrangement of the tubes.*

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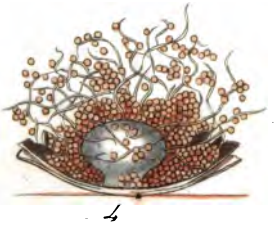

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DIDERMA GLOBOSUM.

Globose Diderma.

CLASS AND ORDER CRYPTOGAMIA FUNGI, *Linn.*—NAT. ORD. *GASTROMYCI, Link, Grev.*

GENERIC CHARACTER.

Sporangium subglobosum. Peridium duplex; exterius fragile. Columella intra peridium. Sporulæ filamentis intermixtæ.

Sporangium subglobose. Peridium double; the outer one fragile. Sporules intermixed with filaments, and surrounding a columella.

SPECIFIC CHARACTER.

DIDERMA globosum; *sessile, subglobosum, lævè, candidum; peridiis fragilis; sporulis globosis.*

D. sessile, roundish, smooth, white; the peridia fragile; the sporules globular.

DIDERMA globosum, *Pers. Disp. Fung.* p. 9. t. 4. f. 4, 5.—*Ejusd. Syn. Fung.* p. 167.—*Alb. et Schwein.* p. 89.—*Schwein. Syn. Fung. Carol.* No. 365.—*Sturm's Deutschl. Fl. cum icone.*—*Hook. Fl. Scot.* 2. p. 12.—*Grev. Fl. Edin.* p. 453.

HAB. On dead Beech and Oak leaves in autumn. Frequent.

Gregarious, sessile, minute, about a line in diameter, roundish, somewhat depressed, white or greyish, the outer *peridium* fragile and evanescent in farinaceous particles; the inner one also fragile, grey, membranaceous. *Columella* large, white, roundish. *Sporules* globose, dark-coloured, intermixed with filaments.

Considerable uncertainty exists about the generic character of *Diderma*. PERSOON described under it plants with a single and with a double peridium; some of which have a columella, others none. LINK, who has constituted several new and excellent genera of minute *Gastromyci*, has referred to *Diderma* such species as possess a double peridium and no columella; while his *Didymium* (to which our plant belongs) is provided with a columella in addition to the two peridia. As the species now figured is of more frequent occurrence than any other one of

Didymium or *Diderma*, and as it has been regarded by almost every author as belonging to the latter, I have thought it best to allow it to remain in the same situation, and have formed the generic character accordingly. If this arrangement be approved of, *Didymium* will include those minute plants which are destitute of a columella, but have a double peridium.

DITMAR has given an excellent figure of *D. globosum* in STURM's Deutschland Flora.

Fig. 1. *D. globosum, nat. size.* Fig. 2. *A sporangium removed.* Figs. 3. *The same, showing the progress of dehiscence.* Fig. 4. *The remains of a sporangium, exhibiting the columella, &c.* Fig. 5. *Sporules.—All except* Fig. 1. *more or less magnified.*

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GRIMMIA UNICOLOR.

Dark shining Grimmia.

CLASS AND ORDER CRYPTOGAMIA MUSCI, *Linn.*—NAT. ORD. *MUSCI, Juss. De Cand. Hook.*

GENERIC CHARACTER.

Seta terminalis. Peristomium simplex e dentibus 16 *integris vel perforatis (rarissime fissis) æquidistantibus. Calyptra mitriformis.*—HOOK.

Seta terminal. Peristome simple, of 16 entire or perforate (rarely cleft) equidistant teeth. Calyptra mitriform.

SPECIFIC CHARACTER.

GRIMMIA unicolor; *caule elongato; foliis anguste lanceolatis, obtusis, integris, concavis; theca lævi, ovata, pallida, operculo conico-rostrato; seta breviuscula, flexuosa.*

G. stem elongated; leaves narrow-lanceolate, obtuse, entire, concave; theca smooth, ovate, pale, with a conical rostrate lid; seta rather short, flexuose.

GRIMMIA unicolor, *Hook.* MSS.

HAB. Rocks near Bachnagairn, the Honourable D. OGILVIE's hunting lodge at the head of Clova; not rare, Mr DRUMMOND.

Plant growing in dense tufts, of a very dark green hue, the summits of the branches only being rather paler, the whole, however, possessing a remarkable glossiness. *Stems* half an inch to two inches in length, slender, branched, and separating from each other when gathered, in the manner of *Trichostomum patens*. *Leaves* brown below, blackish-green upwards, narrow-lanceolate, towards their extremity becoming nearly linear, very obtuse, with a nerve running to the apex; erecto-patent when moist, of a thickish rigid substance, and so singularly concave to the very apex, as to give to the back a convex or semicylindrical appearance. *Theca* ovate, inclined, smooth, mostly pale yellowish. *Lid* reddish at the base, conical, with a rather long oblique beak. *Peristome* of 16 lanceolate, deep red, quite entire teeth. *Calyptra* very scariose at the base, split into many segments, at length dimidiate. *Seta* 2–3 lines long, pale yellowish, flexuose.

From the general habit of this moss, no one at all acquainted with muscology would hesitate to consider it a *Grimmia*. Accordingly, it was so named by Dr HOOKER; but whilst I

was preparing its description for publication, I was surprised to find, among other specimens which had arrived from its intelligent discoverer, all the mature calyptræ to be unequivocally dimidiate: in the young state alone do they retain their mitriform character. The species, however, is so decidedly a *Grimmia* in every other respect, that it would be highly injudicious to exclude it, on account of the ultimately dimidiate calyptra, though, in the present state of the science, we must be swayed more or less by artificial characters.

In general appearance, *Grimmia unicolor* approaches to *Trichostomum ellipticum*, but it bears the nearest resemblance to *T. microcarpum*, for which it might be passed over even by experienced botanists. On the Clova Mountains, it seems far from rare, as Mr DRUMMOND, in a second excursion, found it plentifully. In fruit it is not so frequent.

All the specimens I have seen, produce occasionally very slender filiform shoots, imbricated with leaves of a different form from those of the main stem and branches. One of these I have introduced into the accompanying plate, with a magnified representation at Fig. 6.

Figs. 1. & 2. *Grimmia unicolor, nat. size.* Fig. 3. *A plant magnified.* Fig. 4. *Lower leaf.* Fig. 5. *Upper leaves.* Fig. 6. *Leaves belonging to the filiform shoots above alluded to.* Fig. 7. *Theca.* Fig. 8. *Lid.* Fig. 9. *Portion of the peristome.*

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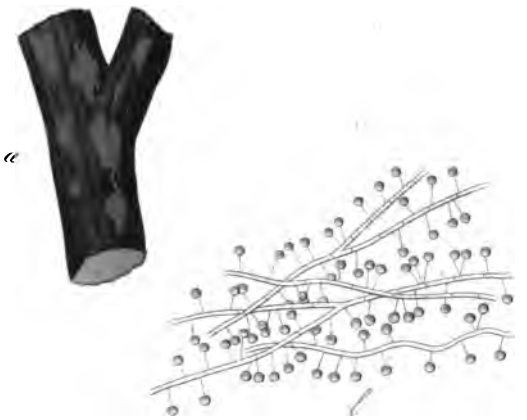

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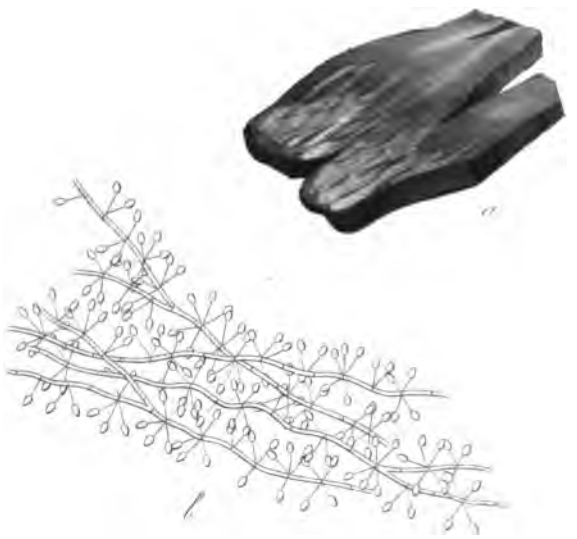


ACREMONIUM FUSCUM.

Brownish Acremonium.

CLASS AND ORDER CRYPTOGAMIA FUNGI, *Linn.*—NAT. ORD. *BYSSOIDEÆ, Grev.*—MUCEDINES, *Link.*

GENERIC CHARACTER.

Thallus e filamentis decumbentibus implexis, ramosis, septatis. Sporidia solitaria æqualiter pedicellata.

Thallus composed of decumbent, entangled, branched and jointed filaments. Sporidia solitary, on pedicels of equal length.

SPECIFIC CHARACTER.

ACREMONIUM fuscum; *thallo fusco-olivaceo; sporidiis globosis, alternatis.*

A. thallus olive-brown; sporidia globose, alternate.

ACREMONIUM fuscum, *Schmidt, in Mykol. Hefte,* 1. p. 79. t. 2. f. 23.—*Pers. Mycol. Europ.* 1. p. 27.—*Grev. Fl. Edin.* p. 468.

HAB. On dead wood and damp stems of large herbaceous plants when decayed. Autumn. Near Edinburgh.

Thallus spreading, like a very fine web; of an olivaceous colour. *Filaments* remotely branched, much interwoven, jointed, pellucid. *Sporidia* globose, somewhat opaque, their pedicels arranged alternately.

With this, neither of the other two known species is likely to be confounded; the thallus in both being of a white colour. As a genus, *Acremonium* is well defined; and as a microscopical object, it is far from being the least interesting of the Order to which it belongs.

Fig. 1. a, *A. fuscum, nat. size.* b, *Filaments and Sporidia magnified.*

ACREMONIUM VERTICILLATUM.

Whorled Acremonium.

SPECIFIC CHARACTER.

ACREMONIUM verticillatum; *thallo albo; sporidiis ovatis, verticillatis.*

A. Thallus white; sporidia ovate, whorled.

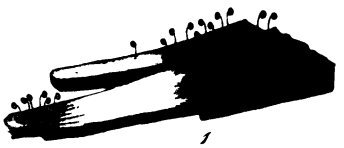
ACREMONIUM verticillatum, *Link, in Berl. Mag.* 3. p. 15. t. 1. f. 20.—*Pers. Mycol. Europ.* 1. p. 27.

HAB. On dead wood and trunks of trees. Near Edinburgh. Spring.

Thallus spreading, in the form of a white web. *Filaments* very slender, branched, jointed. *Sporidia* more ovate than oval, their pedicels arising in a whorled manner.

In the third species, *A. alternatum* of LINK, the sporidia are arranged alternately. PERSOON seems to have taken a very erroneous view of the genus, which he says bears some resemblance to *Himantia*. He confesses, however, "genus mihi plane ignotum."

Fig. 2. a, *A. verticillatum, nat. size.* b, *Filaments and Sporidia, magnified.*



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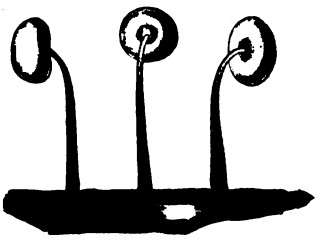

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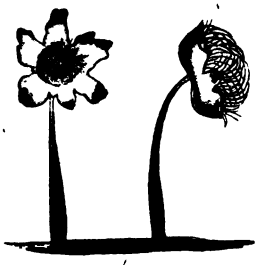

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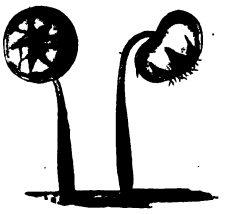

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PHYSARUM AUREUM.

Golden-yellow Physarum.

CLASS AND ORDER. CRYPTOGAMIA FUNGI, *Linn.*—NAT. ORD. *GASTROMYCI, Link, Grev.*

GENERIC CHARACTER.

Sporangium (minutum) subglobosum aut difforme. Peridium simplex, dehiscens, squamulosum. Columella nulla. Sporulæ filamentis intermixtæ.

Sporangium (minute) subglobose or shapeless. Peridium simple, bursting, squamulose. Columella 0. Sporules intermixed with filaments.

SPECIFIC CHARACTER.

PHYSARUM aureum; *peridio subgloboso, aureo; stipite tenui, elongato, subfuligineo; sporulis globosis,*

P. peridium subglobose, fine yellow; stipes slender, rather long, greyish-brown; sporules globose.

PHYSARUM aureum, *Pers. Disp. Fung.* p. 8. t. 1. f. 6.—*Ejusd. Syn. Fung.* p. 173.—*Alb. et Schwein.* p. 94.—*Sturm's Deutschl. Fl. cum icone.*—*Schwein. Syn. Fung. Carol.* No. 375.

HAB. On decaying trunks of trees; not unfrequent, in spring and autumn.

Gregarious, minute. *Stipes* rather more than a line high, slender, of a brownish-grey colour, smooth, long for the size of the plant. *Sporangium* subglobose, umbilicated, nodding, of a fine yellow colour. *Peridium* membranaceous, bursting, one portion deciduous, but several unequal laciniæ are somewhat persistent, and partly reflexed. *Sporules* very dark, globose.

This elegant species of a beautiful genus, is a frequent inhabitant of damp woods, its favourite situation being on the decaying stumps of fir and other trees. Many other species have been described as natives of this country; and some of them are so difficult to distinguish, on account of their general resemblance to each other, that authentic figures would be highly desirable. Subjects of this nature have received particular attention in the course of the present work; but my primary object is to illustrate as many *genera* as possible, and consequent-

ly, observations tending to elucidate species can only be occasionally introduced.

In the early state, the sporangium of *Physarum* is quite pulpy, and has been compared by LINK to a berry. When mature, the peridium in almost every instance is scurfy or furfuraceous, and bursts in such a manner that the greater portion of it splits into small pieces, which separate and fall away: this effect seems to be produced by the elastic action of the filaments within the peridium, which remain attached to the base, and contain the intermingled mass of sporules.

The genus *Cionium* differs from *Physarum* only by being furnished with a columella.

Fig. 1. *Phys. aureum, nat. size.* Fig. 2. *Ditto, magnified.* Figs. 3. & 4. *The same, showing the progress of dehiscence.* Fig. 5. *Sporules and filaments.* —*All except* Fig. 1. *more or less magnified.*

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BOTRYTIS AGARICINA.

Mushroom Botrytis.

CLASS AND ORDER CRYPTOGAMIA FUNGI, *Linn.*—NAT. ORD. *BYSSOIDEÆ, Grev.*—MUCEDINES, *Link.*

GENERIC CHARACTER.

Flocci erecti, plus minusve patulo-ramosi, septati, basi sæpe implexi. Sporidia decidua, circum apices ramulorum aggregata.

Filaments erect, with more or less spreading branches, jointed, often interwoven at the base. Sporidia deciduous, collected around the summits of the branches.

SPECIFIC CHARACTER.

BOTRYTIS agaricina; *cæspitibus effusis, albis, floccis ramosissimis, ramis divaricatis; sporidiis magnis subovalibus.*

B. tufted, effused, white; filaments much branched, the branches divaricate; sporidia large; suboval.

BOTRYTIS agaricina, *Link, in Berl. Mag.* v. 3. p. 15.—*Sturm's Deutschl. Fl.* t. 51.—*Pers. Mycol. Europ.* 1. p. 34.

HAB. On decaying fungi *(Agarici)*. Spring and autumn. Near Edinburgh.

Tufts at first distinct, a line high, at length becoming confluent, and covering (as LINK correctly observes) the fungus with a white down. *Filaments* very much branched, the ramuli acute, alternate. *Sporidia* large, oval, very numerous, and collected in a crowded manner about the extremities of the branches.

In the Mycologia Europæa of the celebrated PERSOON, we find several genera which had been established by the German botanists, reduced to *Botrytis;* as *Cladobotryum* and *Virgaria* of NEES, *Stachylidium* of LINK, and *Verticillium* of NEES. It is probable he is correct, except in *Stachylidium* and *Cladobotryum,* which may be good genera. *Virgaria* was considered by LINK as a division of *Botrytis,* only distinguishable by the mode of branching. *Verticillium* passes at once into *Botrytis* through *B. allochroa. Cladobotryum* is dubious, and very peculiar in its cylindrical sporidia. I would not, therefore, hastily contradict so acute a botanist as NEES

AB ESENBECK, unless after actual examination. *Stachylidium* I have little hesitation in regarding as distinct, especially as two species have been discovered, each equally remarkable.

Fig. 1. a, *B. agaricina, nat. size.* b, *Filaments and sporidia, magnified.*

BOTRYTIS DIFFUSA.

Long-racemed Botrytis.

SPECIFIC CHARACTER.

B. *candida, ramosa; ramis longe lateque diffusis, ramulis undique in racemos dispositis, racemuligeris.*—ALB. et SCHWEIN.

B. white, branched; branches long and widely spreading, ramuli forming racemes on every side, and bearing numerous small clusters of sporidia.

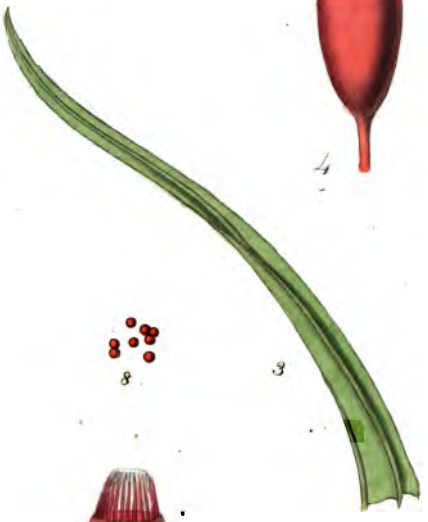
BOTRYTIS diffusa, *Alb. et Schwein. Conspect. Fung.* p. 362.——*Grev. in Wern. Trans.* v. 4. p. 72. t. 5. f. 7.—*Ejusd. Fl. Edin.* p. 468.—*Pers. Mycol.* v. 1. p. 36.

HAB. On the damp, semiputrid stems of herbaceous plants, in autumn. Near Edinburgh.

Tufts two or three lines high, lax, confluent, beautifully white, often spreading on decaying stems of plants for an inch or more continuously. *Filaments* jointed, naked towards their base, and somewhat entangled, divided upwards dichotomously into long, arched and spreading branches, clothed at nearly regular intervals with very short branchlets, each bearing a cluster of minute, globose sporidia.

Extremely beautiful, and much larger than any other *Botrytis* I am acquainted with. The ramuli which support the clusters of sporidia, appear, from their shortness, to be little more than pedicels to the clusters.

Fig. 2. a, *Botrytis diffusa, nat. size.* b, *Filaments, magnified.*



DIDYMODON GLAUCESCENS.

Glaucous Didymodon.

CLASS AND ORDER CRYPTOGAMIA MUSCI, *Linn.*—NAT. ORD. *MUSCI, Just.*

GENERIC CHARACTER.

Seta terminalis. Peristomium simplex e dentibus 16 *vel* 32, *per paria approximatis vel ad basin unitis. Calyptra dimidiata.*—HOOK.

Seta terminal. Peristome simple, of 16 or 32 teeth, approaching in pairs, or united at the base. Calyptra dimidiate.

SPECIFIC CHARACTER.

DIDYMODON glaucescens; *caule breviusculo vel elongato, subramoso, erecto; foliis (glaucescentibus) lanceolato-acuminatis, subpatentibus, nervo percurrente; theca oblonga, operculo brevi.*

D. stem either short or elongated, somewhat branched, erect; leaves (glaucous), lanceolate-acuminate, subpatent, the nerve passing to the apex; theca oblong, with a short lid.

TRICHOSTOMUM glaucescens, *Hedw. St. Crypt.* 3. p. 103. t. 37. B.—*Ejusd. Sp. Musc.* p. 112.—*Brid. Muscol.* 2. p. 123.—*Schwaegr. Suppl.* 1. p. 145.—*Sturm's Deutschl. Fl. cum icone.*—*De Cand. Fl. Franç.* v. 6. p. 216.—*Swartz, Musc. Suec.* p. 30.—*Smith, Fl. Brit.* p. 1245.—*Ejusd. Syn.* p. 171.—*Engl. Bot.* t. 2381. *(bad.)*—*Funck, Deutschl. Moose,* p. 25. t. 17.

BRYUM glaucescens, *Dicks. Crypt. Fasc.* 4. p. 10.

HAB. On mountains in Scotland, Mr DICKSON. Clova Mountains, Mr DRUMMOND. It produces fructification in winter, according to HEDWIG; in summer, according to FUNCK.

Plant growing in dense tufts, chiefly in the crevices of rocks. *Stems* from a few lines to two inches in length, somewhat branched, erect, thickly set with leaves. *Leaves* rather spreading, reddish-brown below, glaucous green above, lanceolato-acuminate, unequally serrulate at the apex, somewhat carinate, and furnished with a percurrent nerve: the uppermost ones are considerably the longest. *Seta* 3–4 lines long. *Theca* varying from ovate to oblong, or even oblong-cylindrical, reddish. *Lid* with a short, nearly straight beak. *Peristome* of 32 long, fine red teeth, united at the very base in pairs. *Calyptra* dimidiate, very deciduous. *Sporules* globular, sometimes with a distinct pedicel.

In consequence of a singular oversight, this interesting moss has not found its way either into the Muscologia Britannica of

Drs HOOKER and TAYLOR, or into the excellent Flora Scotica of the former author; and it is owing to this omission that the present representation has its origin. It was not until the whole impression was in the hands of the colourer, that I ascertained it to be described in English Botany. The figure, however, which is there given, is so incorrect, and withal so destitute of the peculiar character of the plant, that it is confidently hoped the public will pardon the repetition. To the late Mr DICKSON is due the merit of having added this species to our Flora. Mr DRUMMOND, however, after a long interval, has re-discovered it, and transmitted specimens in a perfect state to Dr HOOKER and myself. The calyptra being decidedly dimidiate, has occasioned its removal from the genus *Trichostomum* to that of *Didymodon*, with which it altogether agrees in habit, and to which, Dr HOOKER has indeed long considered it to belong.

It is a remarkable fact, that, in examining the sporules of a capsule not quite mature, though of full size, the greater number were observed to be furnished with pedicels, as represented at Fig. 9.

Figs. 1. *Didymodon glaucescens, nat. size.* Fig. 2. *Lower leaf.* Fig. 3. *Upper ditto.* Fig. 4. *Theca with the operculum.* Fig. 5. *Theca with the peristome.* Fig. 6. *Portion of the peristome.* Fig. 7. *Calyptra.* Fig. 8. *Sporules from a mature theca.* Fig. 9. *Sporules with pedicels from an immature theca.*— *All except* Figs. 1. *more or less magnified.*

128.

AGARICUS RIMOSUS.

Brown cleft Agaric.

CLASS AND ORDER CRYPTOGAMIA FUNGI, *Linn.*—NAT. ORD. *FUNGI, Link, Grev.*

DIV. DERMINUS INOCYBE, *Fries.*—SECT. III. GYMNOPUS, *Pers.*

GENERIC CHARACTER.

Pileus stipitatus aut latere affixus, subtus lamellis sporiferis, rectis, simplicibus. Volva nulla.

Pileus furnished with a stipes, or fixed by its side; bearing, on the under surface, straight, simple, sporuliferous lamellæ. Volva none.

SPECIFIC CHARACTER.

AGARICUS rimosus; *pileo subcarnoso, campanulato, demum subplano, fusco-lutescente, epidermide longitudinaliter rimosa; lamellis subliberis, adnexis; stipite solido, vix stricto, basi subtuberoso, pallido.*

Ag. pileus slightly fleshy, campanulate, at length nearly plane, yellowish-brown, the epidermis splitting into longitudinal clefts; lamellæ nearly free, but in contact with the stipes; stipes solid, scarcely straight, somewhat bulbous, pale.

AGARICUS rimosus, *Bull. Champ.* t. 388. & 589.—*Sow. Fung.* t. 323.—*Pers. Syn. Fung.* p. 310.—*Alb. et Schwein.* p. 164.—*De Cand. Fl. Franç.* ed. 3. v. 2. p. 192.—*Ejusd. Syn.* p. 39.—*With. Bot. Arr.* ed. 6. v. 4. p. 255.—*Relhan, Fl. Cantab.* ed. 3. p. 526.—*Winch, Bot. Guide,* v. 2. p. 84.—*Purt. Midl. Fl.* v. 2. p. 635.—*Grev. Fl. Edin.* p. 388.—*Schwein. Syn. Fung. Carol.* No. 610.

AGARICUS aurivenius, *Batsch. Fung.* t. 20. f. 107.

HAB. Woods, pastures, and waste places, frequent in all parts of Great Britain. Autumn.

Plant scattered. *Pileus* one to near three inches broad, campanulate, at length nearly plane, umbonate, slightly fleshy, of a rather dry fibrous substance, yellowish-brown, of different shades, with a sattiny lustre, the epidermis cracking in numerous longitudinal clefts, and shewing the whitish colour of the flesh. *Lamellæ* numerous, somewhat adhering to the stipes at their base, pale olivaceous-brown, rather ventricose, their edges minutely and irregularly crenate. *Stipes* pale whitish-brown, solid, 2–4 inches long, 2–4 lines thick, firm, fibrillose upwards, more or less tuberous at the base, rarely quite straight. According to FRIES, the summit is farinaceous. *Sporules* oval.

Few species of Agaric preserve their characters more constantly than the one we have just described. The remarkable and numerous longitudinal clefts in the surface of the pileus, which give it a striped appearance, are usually sufficiently obvious, before the plant has attained its full size; and the whole is remarkably fibrillose,—a circumstance which its dry nature renders more obvious. Indeed, the group in which it is placed by FRIES, is well marked, according to that author, by the firm, scaly or fibrillose stipes; the pileus being dry, firm, scaly or silky, with innate longitudinal fibres. The lamellæ are also mostly denticulate, and discoloured at the margin, as in the species before us. All of them grow on the ground, and are chiefly of a small size; and though nothing is positively known respecting their properties, yet it is the general opinion that they are poisonous. It ought to be mentioned, that the colour of *A. rimosus* is a good deal affected by humidity, being much darker in a moist season, and having in rainy weather something of that appearance which Dr WITHERING calls *watery*; which may be understood by observing the difference between a sponge when saturated with water and in a dry state.

Fig. 1. *Section of the pileus.* Fig. 2. *Sporuliferous tubular cells.* Fig. 3. *Sporules.—The two last magnified.*

from its learned author in time to avail myself of its contents in the description of this and the following species.

Fig. 1. a, *H. foliicolum, β, nat. size.* b, *Perithecia removed.* c, *Sporuliferous cells.* d, *Sporules.—All magnified except* a.

HYSTERIUM MACULARE.

Pale spot Hysterium.

SPECIFIC CHARACTER.

HYSTERIUM maculare; *maculæ exaridæ, pallidæ, aggregatum, subrotundo-ellipticum, atrum, margine depresso pallidiore.*

H. collected on pale defined spots, roundish-elliptical, black, the margin depressed, and paler.

HYSTERIUM maculare, *Fries, Scl. Suec.* No. 167.—*Ejusd. Syst. Mycol.* v. 2. p. 592.

HAB. On the dead and dry leaves of various trees, in autumn. On Oak-leaves at Appin, Captain CARMICHAEL. Banks of Loch Lomond.

Perithecia small, aggregated, on pale, almost colourless, distinctly defined spots sometimes bounded by a black line: irregularly placed, oval or roundish-elliptical, smooth, black, the centre somewhat prominent, and at length opening by a narrow cleft, the border depressed, scarcely rising above the level of the leaf, and of a less deep black. *Sporuliferous tubes* filiform. I could not detect the sporules. The disk, according to FRIES, is pale yellowish.

This handsome *Hysterium*, which I had considered as entirely new, agrees so admirably with *H. maculare* of FRIES, as to leave no doubt on my mind of its being the same species. It is frequently found along with *Phacidium dentatum* on the same leaf.

Forty-eight species of this genus are described by FRIES in his Systema.

Fig. 2. 1, *H. maculare, nat. size.* 2, *A part of a group.* 3, *Perithecia removed.* 4, *Sporuliferous tubes.—All magnified except* Fig. 1.

HYSTERIUM FOLIICOLUM, β Hederæ.

Various Hysterium.—Ivy-leaf variety.

CLASS AND ORDER CRYPTOGAMIA FUNGI, *Linn.*—NAT. ORD. *HYPOXYLA, De Cand. Grev.*

GENERIC CHARACTER.

Crusta nulla. Perithecium plerumque oblongum, corneum, rima longitudinali dehiscens. Sporulæ in tubulis hyalinis, elongatis, erectis, gelatinosis.

Crust none. Perithecium mostly oblong, corneous, bursting by a longitudinal slit. Sporules contained in hyaline, elongated, erect, gelatinous tubes.

SPECIFIC CHARACTER.

HYSTERIUM foliicolum; *innatum, sparsum, ellipticum, obtusum, tumidulum, lævе, nudum, nigrum, rima longitudinali depressa.*—FRIES.

H. innate, scattered, elliptical, obtuse, rather tumid, smooth, naked, black, with a longitudinal depression.

HYSTERIUM foliicolum, *Fries, V. A. H.* 1819, p. 102.—*Ejusd. Syst. Mycol.* 2. p. 592.

β, *Hederæ*, elliptical, subacute, opening, and somewhat gaping, *Fries, Syst. Mycol.* 2. p. 593.

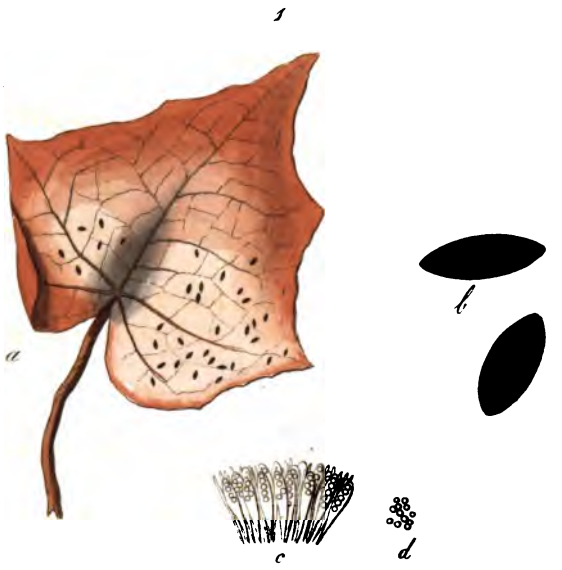
HYSTERIUM Hederæ, *Mart. Erlang.* p. 472.

HYPODERMA xylomoides, γ, Hederæ, *De Cand. Fl. Franç.* v. 6. p. 165.

HAB. On the dead leaves of *Hedera helix*, the common Ivy, in spring. In the grounds of DR BUCHANAN HAMILTON at Leny.

On both surfaces of the leaf, scattered, not occurring on pale defined spots; of different sizes, black, smooth, elliptical, rather acute at each extremity, penetrating the substance of the leaf, tumid, and at length opening with a moderately wide fissure. *Sporuliferous cells* clavate. *Sporules* globular.

The species of which the individual now figured is a variety, I hope in a short period to be able to represent: in the mean time, I have profited by recent specimens to exhibit one state of this variable plant, which well deserves illustration. I have adopted the name given in the 2d volume of the admirable Systema Mycologicum, which I have fortunately received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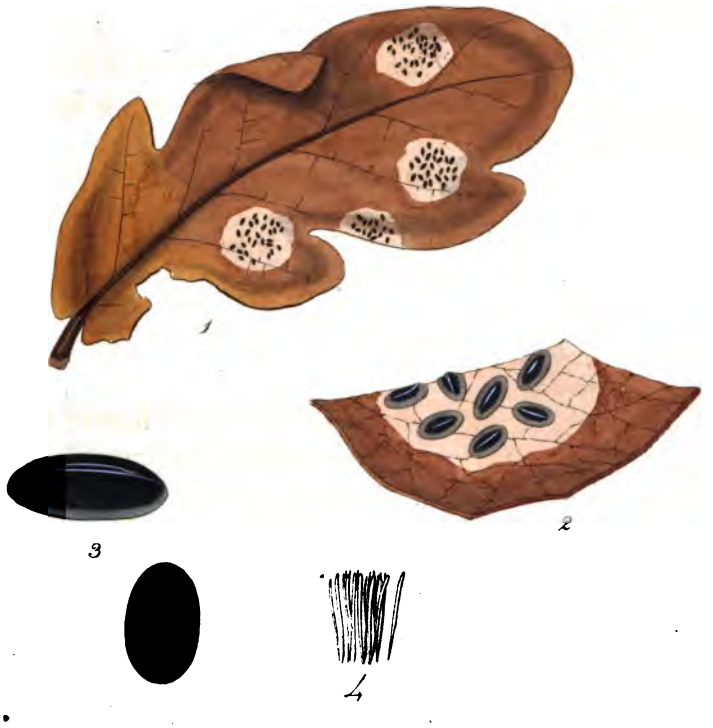
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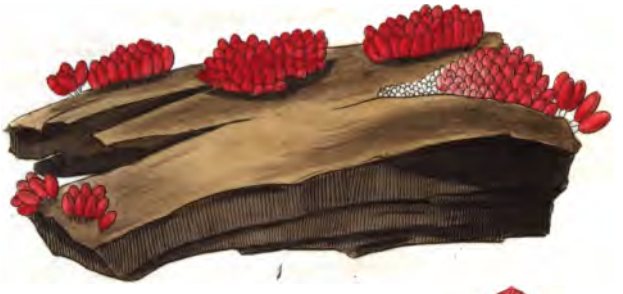

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ARSCYRIA PUNICEA.

Vermilion Arscyria.

CLASS AND ORDER CRYPTOGAMIA FUNGI, *Linn.*—NAT. ORD. *GASTROMYCI, Link, Grev.*

GENERIC CHARACTER.

Peridium plerumque cylindricum, fere ad basin vel dimidium evanescens. Flocci subcompacti, reticulati, basi adnati. Sporulæ floccis inspersæ.

Peridium mostly cylindrical, dimidiate or disappearing nearly to the base. Filaments rather compact, reticulated, fixed to the base. Sporules intermixed with the filaments.

SPECIFIC CHARACTER.

ARSCYRIA punicea; *gregaria, congesta, ovato-cylindrica, cinnabarina.*

A. gregarious, crowded, ovate-cylindrical, fine crimson-red.

ARSCYRIA punicea, *Pers. Disp. Meth. Fung.* p. 10.—*Ejusd. Syn. Fung.* p. 185.—*Alb. et Schwein.* p. 101.—*Hook. Fl. Scot.* 2. p. 13.—*Schwein. Syn. Fung. Carol.* No. 399.—*Nees, Syst.* t. 10. f. 114. *Grev. Fl. Edin.* p. 455.

TRICHIA cinnabaris, *Bull. Champ.* p. 121. t. 502. f. 1. *De Cand. Fl. Franç.* ed. 3. v. 2. p. 255.—*Ejusd. Syn.* p. 53.

TRICHIA denudata, *With. Bot. Arr.* ed. 6. v. 4. p. 472.—*Sow. Fung.* t. 49.—*Purt. Midl. Fl.* v. 2. p. 718. t. 24. f. 2.

TRICHIA graniformis, *Hoffm. Veg. Crypt.* 2. p. 3. t. 1. f. 2.

CLATHRUS denudatus, *Linn. Sp. Plant.* 1649.—*Jacq. Misc. Aust.* 1. t. 6.—*Bolt. Fung.* t. 93. f. 2.—*Huds. Fl. Angl.* p. 630.

STEMONITIS denudata, *Rehl. Fl. Cantab.* ed. 3. p. 574.

EMBOLUS crocatus, *Batsch. Elench. Fung.* 2. p. 265. t. 30. f. 177.

TRICHIA gregaria, purpurea, petiolata, capitulo sphærico? *Hall. Hist.* 2164. t. 48. f. 6.

CLATHROIDES purpureum, pediculo donatum, *Mich. Gen.* 214. t. 94. f. 1.

HAB. On rotten wood and stumps of trees, not unfrequent. Summer and autumn.

Gregarious, and growing in a very crowded manner in all directions, sometimes even downwards; ovate-cylindrical, about two or three lines in height; when young the colour is white, and the whole forms a pulpy sessile mass; by degrees the form of the peridium begins to appear, the colour changes, and a slender stipes is produced; when mature, the colour is a fine purplish-vermilion, and the pedicels are found to arise from a thin subjacent membrane. *Peridium* somewhat venose, thin, speedily disappearing, except a small cup-like portion at the base. *Filaments* fixed at their base, forming a reticulated mass, which preserves the form

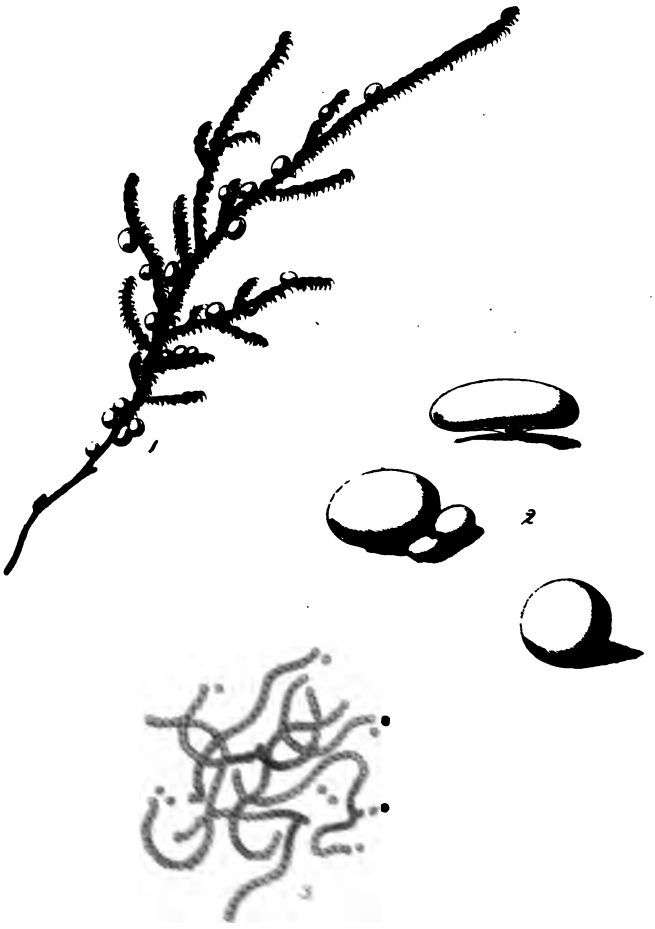
of the plant, and resembles a lock of crimson wool. *Sporules* lying among the filaments, fine red, globular, minute.

This species, which I have chosen for the illustration of the genus *Arscyria*, is one celebrated among mycologists for its beauty; its vivid colour would indeed render it conspicuous to the most careless observer. To this circumstance must be attributed its escape from that neglect to which such minute plants were exposed in the days of the older botanists; for we find it perhaps more frequently described and figured than any other of its congeners.

It frequently happens, that more than one peridium is produced on the same stipes.

Arscyria incarnata, figured by STURM in his Deutschland Flora, and which Mr PURTON has probably quoted by mistake for our plant, approaches the nearest to it, but is of a delicate pink colour, much smaller, and has a very short pale stipes.

Fig. 1. *A. punicea, nat. size.* Fig. 2. *Young plants.* Fig. 3. *A plant in the act of bursting.* Fig. 4. *The same, having lost its peridium.* Fig. 5. *A clustered variety.* Fig. 6. *Filaments and sporules.—All except* Fig. 1. *more or less magnified.*



NOSTOC cœruleum.

Small blue Nostoc.

Class and Order CRYPTOGAMIA ALGÆ, *Linn.*—Nat. Ord. *CHÆTOPHOROIDEÆ, Grev.*—ALGÆ, *Juss. &c.*

GENERIC CHARACTER.

Massa gelatinosa, difformis vel globosa, filis simplicibus, curvatis, moniliformibus farcta.—Lyngbye.

A gelatinous, shapeless or globose mass, filled with simple, curved, moniliform filaments.

SPECIFIC CHARACTER.

Nostoc cœruleum; *fronde minuta, globosa, solitaria, solida, lævi, cœrulea, subpellucida; filis internis simplicibus, curvatis, moniliformibus.*—Lyngb.

N. frond minute, globose, solitary, solid, smooth, pale blue, subpellucid; filaments simple, curved, moniliform.

Nostoc cœruleum, *Lyngb. Hydroph. Dan.* p. 201. t. 68.

Hab. In flowing water, and in very moist places, attached to various mosses. In the grounds of Dr Buchanan Hamilton, near Callender. May.

Plants 1–2 lines in diameter, gelatinous, globose, gregarious, but distinct, subpellucid, of a delicate pale blue colour, rarely almost colourless: solid, and filled with simple, curved, moniliform filaments, the joints of which appear to separate spontaneously, and probably supply the place of sporules. In drying, they shrink almost to nothing.

A very elegant and delicate little plant, only described by Lyngbye, who has also given an indifferent figure of it. It is probably of frequent occurrence, and grew in the utmost profusion in the spot where I discovered it.

Fig. 1. *N. cœruleum, nat. size, on Hypnum aduncum.* Fig. 2. *Several plants removed.* Fig. 3. *Filaments, some of their joints having separated.*—Figs. 2. *and 3. magnified.*

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LEANGIUM? TREVELYANI.

Sessile many-cleft Leangium.

CLASS AND ORDER CRYPTOGAMIA FUNGI, *Linn.*—NAT. ORD. *GASTROMYCI, Link, Grev.*

GENERIC CHARACTER.

Sporangium subglobosum. Peridium simplex, membranaceum, plerumque stellatim dehiscens. Columella intra peridium. Sporulæ filamentis inspersæ.

Sporangium subglobose. Peridium simple, membranaceous, mostly dehiscent in a stellate manner. Columella within the peridium. Sporules arranged among the filaments.

SPECIFIC CHARACTER.

LEANGIUM? Trevelyani; *sporangium sessile, peridio segmentis plurimis linearibus subregularibus reflexis dehiscenti; columella minima; sporulis pedicellatis.*

L. sporangium sessile; peridium splitting into many linear, subregular, reflexed segments; columella very minute; sporules pedicellated.

HAB. On the leaves of the larger mosses. On *Bryum ligulatum*, Northumberland, W. C. TREVELYAN, Esq. Woods about Edinburgh, exceedingly rare. Autumn.

Gregarious. *Sporangium* sessile, ovato-globose, about a line in diameter, reddish-brown, splitting into a number of pretty regular, linear segments, which gradually become reflexed in a very beautiful manner. *Colour* of the inner surface pale reddish-grey. *Columella* extremely small, globose, sessile, surrounded by a black light mass of filaments, to which the globular sporules are irregularly attached by minute pedicels, as in the genus *Bovista*.

This is the most elegant of all the minute *Gastromyci* I ever beheld. Whether we regard the extreme symmetry of its form, or its delicate structure and pleasing colour, it forms one of the most charming little objects the eye can possibly rest upon. A diminutive moss * infused life and hope into the exhausted frame of the African traveller MUNGO PARK, when

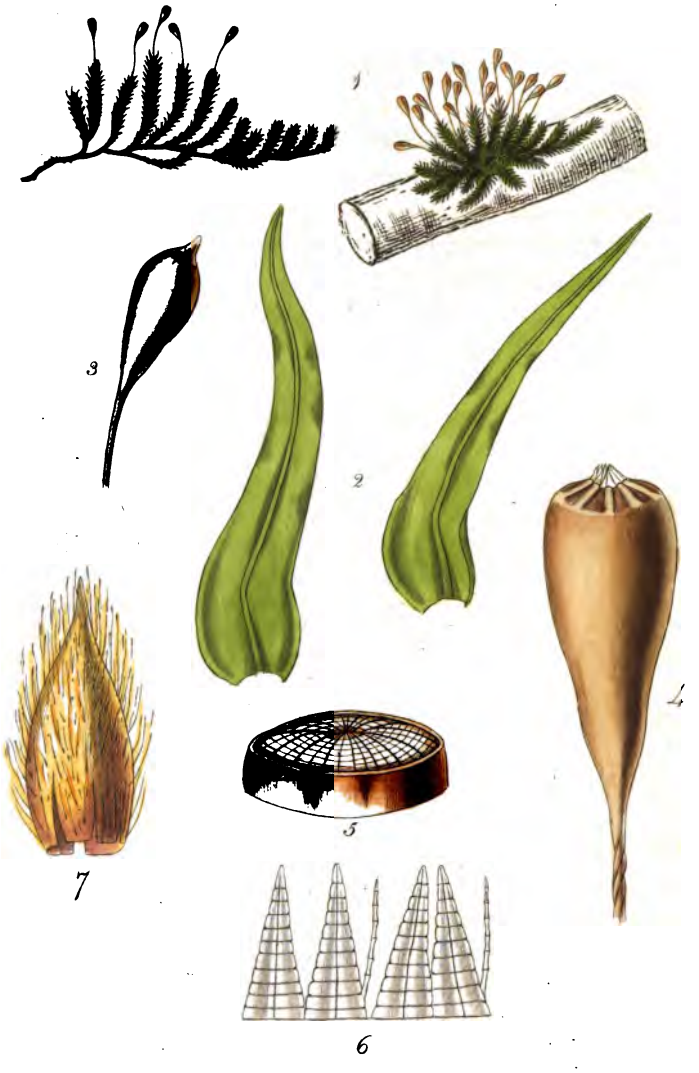
* *Dicranum bryoides.*

he had cast himself down to die; the beauty of its minute foliage brought to perfection in the desert, at once raised his eye to that Power which had not failed to nourish the delicate structure it had created: and is there any one of taste and right feeling, in whose breast some similar emotion does not arise at the sight of so perfect a form as that of our minute *Leangium*?

It is not without much pleasure that I am enabled to dedicate this plant to its discoverer, my esteemed friend W. C. TREVELYAN, Esq.

I cannot but consider its genus as rather uncertain, not merely on account of the very small columella, but chiefly from the pedicellated sporules, which do not often occur in the *Gastromyci*, and have not been noticed by any author as belonging to the genus *Leangium*.

Fig. 1. *L. Trevelyani, nat. size.* Fig. 2. *A leaf of the Bryum removed, with plants.* Fig. 3. *A single plant bursting.* Fig. 4. *A plant, having lost its contents.* Fig. 5. *Filaments and sporules.—All except* Fig. 1. *more or less magnified.*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ORTHOTRICHUM LUDWIGII.

Ludwig's Orthotrichum.

CLASS AND ORDER CRYPTOGAMIA MUSCI, *Linn.*—NAT. ORD. *MUSCI, Juss.*

GENERIC CHARACTER.

Seta terminalis. Peristomium simplex vel duplex; dentibus vel 8 *trilineatis, vel* 16 *unilineatis per paria approximatis; ciliis* 8 *vel* 16 *vel raro membrana erecta lacerata. Columella acuta. Calyptra mitriformis.*—HOOK. & GREV.

Seta terminal. Peristome simple or double; the outer one of 8 teeth, marked with 3 longitudinal lines, or 16 marked with 1 line, approximated in pairs: the inner one of 8 or 16 ciliary processes, or rarely of an erect, lacerated membrane. Columella acute. Calyptra mitriform.

SPECIFIC CHARACTER.

ORTHOTRICHUM Ludwigii; *caulibus repentibus, foliis erecto-patentibus, anguste lanceolatis, siccitate crispatulis; theca pyriformi lævi ad apicem solummodo plicata, ore contractissimo; calyptra valde pilosa.*

O. stems creeping; leaves erecto-patent, narrow-lanceolate, crisped when dry; theca pyriform smooth, plicate at the very apex, the orifice exceedingly contracted; calyptra very hairy.

ORTHOTRICHUM Ludwigii, *Brid. Musc. Suppl.* p. 26.—*Schwaegr. Suppl.* 1. Pt. 2. p. 24. t. 51.—*Moug. et Nestl. Pl. Exsicc. Vog.* No. 617.—*Sturm, Deutschl. Fl. icon.—Hook. & Grev. in Edin. Journ. of Science,* v. 1. p. 125.

ORTHOTRICHUM clausum, *Hornsch.* MSS.?

SPLACHNUM Wufenianum, *Schwaegr. Suppl.* 1. Pt. 1. p. 46. t. 14.

HAB. On the trunks and branches of trees, especially those with smooth bark, as Birch and Hazel. About Forfar, Mr DRUMMOND. Glen Fallich; and the country around Callender and the Pass of Leny, plentiful, Messrs HOOKER and GREVILLE.

Stems creeping, and throwing up a number of short, simple, or divided branches, mostly of a rather pale green colour. *Leaves* numerous, erecto-patent, somewhat crisped when dry, narrow lanceolate, and slightly dilated at the base. *Seta* about a quarter of an inch long, slender. *Theca* pear-shaped, of a pale yellowish colour, quite smooth, suddenly plicate or puckered at the apex, and the orifice so contracted in consequence, as to bring the base of the teeth into contact. *Peristome* of 8 very pale geminate teeth, which at length divide into 16, approaching in pairs: and 8 ciliary processes, exceedingly slender, and arising from the sides of the outer teeth. *Lid* short, conico-rostrate. *Calyptra* hairy to its very base.

" It was not before we had examined very numerous specimens of this plant, both natives of the Continent and of our own country, that we were enabled to ascertain the presence of an inner peristome. It is composed of eight exceedingly slender ciliæ, arising from the sides of the teeth; and, from their highly delicate nature, they are extremely fugacious. They are formed of a single row of elongated cellules. We may here observe, that Drs MOUGEOT and NESTLER, who published in their Stirpes a plant which they consider *O. Ludwigii*, afterwards, on ascertaining that it had no internal peristome, referred it to *O. clausum* of HORNSCHUCH's MSS. We have quoted the latter plant with a mark of doubt, though we cannot help believing, from our own experience, that the plant of MOUGEOT and HORNSCHUCH is the same as ours, agreeing with it it in every respect, save in the alleged absence of an inner peristome." Such are the observations of Dr HOOKER and myself, after a laborious examination of this very beautiful and rare species. In this country, it is almost invariably associated with *O. crispum* and *O. Drummondii:* frequently, indeed, growing intermingled in the same tuft. In habit, it nearly resembles the latter, but is admirably distinguished by its smooth and pyriform thecæ; while both are at once removed from *O. crispum* by the creeping stems, and far less crisped foliage.

O. Ludwigii was first determined as a British plant by Mr DRUMMOND of Forfar, and is the fourth species of this genus which has been added to our Flora since the publication of Professor HOOKER's Flora Scotica. One of these *(O. speciosum)* remains to be figured in this work, and will appear in the next number.

Fig. 1. *O. Ludwigii, nat. size.* Fig. 2. *Leaves.* Fig. 3. *Theca, with the operculum.* Fig. 4. *Theca with the peristome.* Fig. 5. *Peristome when moist.* Fig. 6. *Teeth and ciliary processes of the peristome.* Fig. 7. *Calyptra.*— *All except* Fig. 1. *more or less magnified.*

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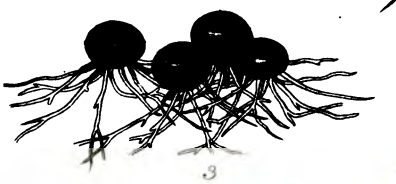

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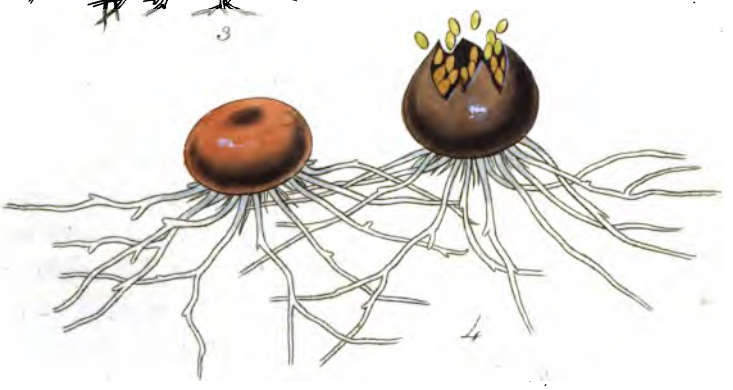

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ERYSIPHE Pisi.

Pea Leaf-mould.

Class and Order CRYPTOGAMIA FUNGI, *Linn.*—Nat. Ord. *GASTROMYCI, Link, Grev.*—Part of FUNGI, *Juss.*

GENERIC CHARACTER.

Sporangium minutum, globosum, carnosum, luteum, demum nigrum, sporidia magna includens; basi filamentis albis, numerosis, radiantibus, simplicibus, vel ramosis instructum.

Sporangium minute, globose, carnose, yellow, at length black, inclosing large sporidia, and furnished at the base with numerous, white, simple or branched, radiating filaments.

SPECIFIC CHARACTER.

Erysiphe Pisi; *sparsa; filamentis plurimis, longissimis, ramosis, tenuissimis, in pelliculam intertextis; sporidiis ovalibus.*

E. scattered on the leaves, petiols, &c.; filaments numerous, very long, branched, exceedingly slender, interwoven into a pellicle; sporidia oval.

Erysiphe Pisi, *De Cand. Fl. Franç.* ed. 3. v. 2. p. 274.—*Ejusd. Syn.* p. 57.—*Grev. Fl. Edin.* p. 461.

Hab. On *Pisum sativum*, the common garden Pea; very frequent in Summer and Autumn. Foxhall, Captain Wauch. About Edinburgh, abundant.

Gregarious, on the stems, leaves and petioles; often so plentiful as to considerably darken the surface of the leaves, while those parts not occupied by the sporangia are covered with a fine white pellicle or web. *Sporangia* minute, globose, yellow, then orange-brown or reddish, at length black; smooth, umbilicated at the apex. *Radiating filaments* slender, very long, branched, exceedingly entangled and interwoven, very numerous. *Sporidia* many, oval, containing 2 or 3 oval, very minute sporules.

Erysiphe of Rebentisch is perhaps one of the most extraordinary genera of *Gastromyci* we are acquainted with. All the species are found on living leaves, and are well known to gardeners, nurserymen and farmers, by the general but improper name of Mildew; though other diseases have also received

the same name. On the Garden Pea its effects are so injurious as sometimes to destroy the whole crop. That it should occasion so much mischief, ceases to be wonderful, when we submit it to the power of the microscope. The leaves are then found to be completely coated (sometimes on both sides) with a thin but very dense web of filaments, which must materially interrupt the natural functions of the plant. Added to this, it is highly probable that the innumerable receptacles or sporangia situated on the filaments, derive their support in a greater or less degree through their medium from the juices of the plant. These parasites have been discovered on a great number of vegetables; and at present it is extremely difficult to say what are distinct species. I have recently been informed, however, by my friend Dr MOUGEOT, that M. WALLROTH has written an essay on this genus, to which he has given the name of *Alphitomorpha*; he reduces the number of species to fifteen, and rejects all names taken from those of the plants on which they grow.

I have represented one of the sporangia dehiscent in the plate; but do not affirm it to be naturally so. Such minute subjects are difficult to dissect; and it is probable I may not be correct in this representation.

Fig. 1. *E. Pisi, nat. size.* Fig. 2. *A group detached.* Fig. 3. *The same.* Fig. 4. *Sporangia very highly magnified.* Fig. 5. *Sporidia.—All magnified except* Fig. 1.

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CUCURBITARIA CINNABARINA.

Red granulated Cucurbitaria.

CLASS AND ORDER CRYPTOGAMIA FUNGI, *Linn.*—NAT. ORD. *HYPOXYLA*, *De Cand. Grev.*

GENERIC CHARACTER.

Sphærulæ corneæ, cæspitosæ, liberæ, receptaculo insidentes, raro primo inclusæ; intus massa gelatinosa sporulifera instructa.

Spherules corneous, clustered, free, fixed on a receptacle, rarely at first included. Interior filled with a gelatineus sporuliferous mass.

SPECIFIC CHARACTER.

CUCURBITARIA cinnabarina; *cæspitosa; sphærulis confertis, globosis, granulosis cinnabarinis, ore vix papilliformi.*

C. cæspitose; spherules crowded, globose, granulated, orange-red, the orifice scarcely papillæform.

CUCURBITARIA decolorans, *Grev. Fl. Edin.* p. 359.

SPHÆRIA cinnabarina, *Tode, Fung. Meckl.* 2. p. 9. t. 9. f. 68.—*Fries, Syst. Mycol.* v. 2. p. 412.

SPHÆRIA decolorans, *Pers. Syn. Fung.* p. 49.—*Alb. et Schwein.* p. 24.—*Schwein. Fung. Carol.* No. 118.—*Moug. et Nestl. St. Exsicc.* No. 570.—*Hook. Fl. Scot.* 2. p. 6.

SPHÆRIA pezizoidea, α and γ, *De Cand. Fl. Franç.* v. 6. p. 125.

SPHÆRIA fragiformis, *With. Bot. Arr.* ed. 6. v. 4. p. 465.—*Relhan, Fl. Cantab.* p. 571.

HAB. On dead branches of trees, very common.

Clustered. Whole plant 1–3 lines broad, of an orange-red colour, becoming dingy and pale in age. *Spherules* crowded, globose, tuberculated and rugose, with an indistinctly prominent orifice, which at length becomes depressed and slightly collapsed. The spherules are seated upon a red receptacle, of a rather soft consistence, and which closely resembles a *Tubercularia*. *Sporules* oblong, contained in clavato-lanceolate thecæ or hyaline tubes.

I have been induced to figure the present plant, notwithstanding its exceedingly frequent occurrence, on account of the confusion which attaches to it in this country. This

seems principally to be caused by the specific name of *fragiformis* having been given to two distinct species; and it unfortunately happens, that the resemblance in both to a strawberry in miniature is equally striking. WITHERING (who indeed is scarcely worth quoting in cryptogamia) has brought together the plant figured and described by HALLER, and that figured by SOWERBY, t. 256., though the two plates positively contradict each other; besides which, he has also added *Sphæria bullata* of HOFFMANN, which is a variety of *Stromatosphæria fusca*. My friend Mr PURTON has also unaccountably got entangled in the same labyrinth. At p. 706. of his Midland Flora, he has described correctly the *Sphæria fragiformis* of WITHERING and SOWERBY; but in his Supplement, p. 485., has given as a synonym the true *S. fragiformis* of HALLER, HOFFMANN, PERSOON and FRIES; as also of our countrymen DICKSON and RELHAN. His next synonym of *S. cinnabarina* is correct; but the following one of *S. coccinea* (MOUG. & NESTL. St. Exsicc. No. 188.) belongs to the true *S. coccinea* of PERSOON.

The remarkable resemblance between the receptacle of this species and the *Tuberculariæ*, cannot escape the intelligent observer. TODE in fact actually describes it as parasitic upon *Tubercularia vulgaris*. The learned FRIES does not seem satisfied on the subject, and Mr PURTON has not failed to notice its exact similarity.

Fig. 1. *C. cinnabarina, nat. size.* Fig. 2. *A cluster.* Fig. 3. *The same divided.* Fig. 4. *Theca.* Fig. 5. *Sporules.—All magnified except* Fig. 1.

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STROMATOSPHÆRIA FRAGIFORMIS, var. *lævis*.

Strawberry-like Stromatosphæria.—Smooth variety.

CLASS AND ORDER CRYPTOGAMIA FUNGI, *Linn.*—NAT. ORD. *HYPOXYLA*, *De Cand. Grev.*

GENERIC CHARACTER.

Receptaculum varium, sessile, liberum vel erumpens. Sphærulæ omnino latentes vel ore exserto; intus massa gelatinosa sporulifera instructæ.

Receptacle various, sessile, free or bursting through the bark. Spherules concealed or furnished with an exserted orifice, filled with a gelatinous sporuliferous mass.

SPECIFIC CHARACTER.

STROMATOSPHÆRIA fragiformis; *globosa, miniato-rubiginosa, intus atronitens; sphærulis periphæricis, ostiolis plus minusve prominulis.*

S. globose, purplish-red, shining black within; spherules situated in the circumference, with more or less prominent orifices.

SPHÆRIA fragiformis, *Pers. Annalen der Botanik*, 11. p. 21. t. 2. f. 5.—*Ejusd. Disp.* p. 49.—*Ejusd. Syn. Fung.* p. 9. t. 1. f. 1–2.—*Schum. Sælland.* 2. p. 168.—*Alb. et Schwein.* p. 4.—*Nees, Syst.* t. 40. f. 309.—*Moug. et Nestl. St. Crypt.* No. 273.—*Schmidt, Mycol. Heft*, 2. p. 25. t. 1. f. 20.—*Schwein. Syn. Fung. Carol.* No. 14.—*Hook. Fl. Scot.* 2. p. 4.—*Fries, Syst. Mycol.* 2. p. 332.

SPHÆRIA bicolor, *De Cand. Fl. Franç.* ed. 3. v. 2. p. 286.—*Ejusd. Syn.* p. 59.

SPHÆRIA rubra, *Willd. Berol.* p. 415. *fide Fries.*

SPHÆRIA radians, *Tode, Fung.* 2. p. 29. t. 12. f. 101.

SPHÆRIA lycoperdoides, *With. Bot. Arr.* ed. 6. v. 4. p. 466.—*Relh. Fl. Cantab.* ed. 3. p. 570.—*Purt. Midl. Fl.* v. 2. p. 707.

HYPOXYLON coccineum, *Bull. Champ.* p. 174. t. 495. f. 2.

LYCOPERDON variolosum, *Linn.*—*Huds. Fl. Angl.* p. 645.—*Sow. Fung.* t. 271.

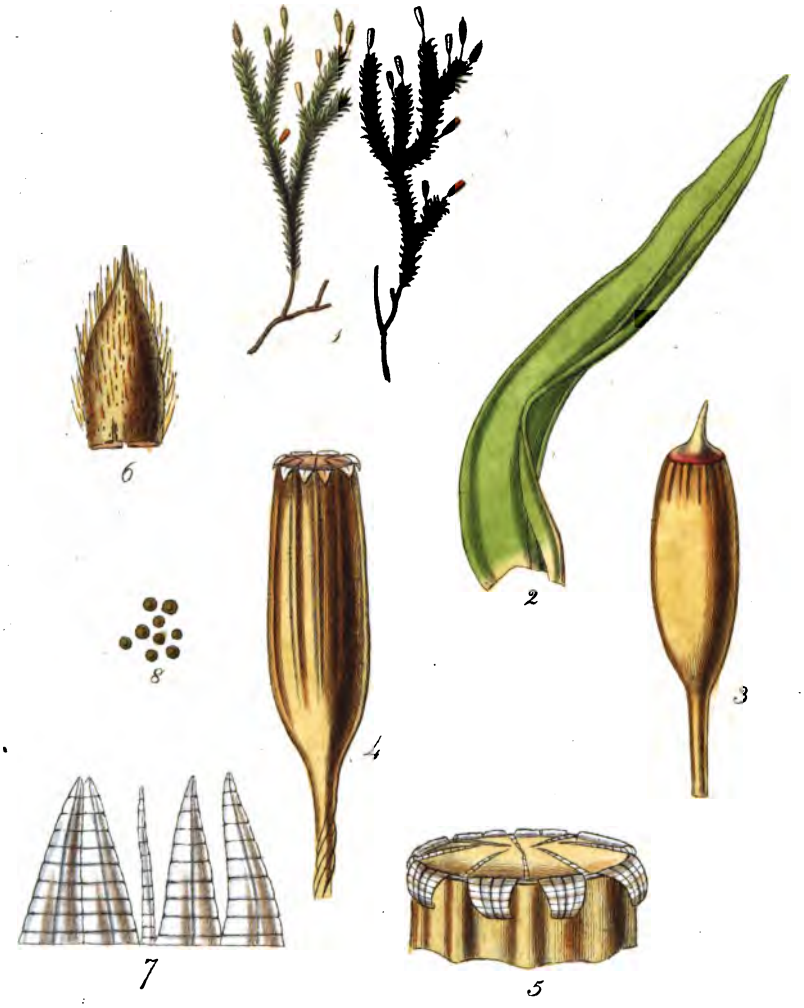
HAB. On dead branches of the common Beech *(Fagus sylvatica)*; rarely on rotten wood or branches of other trees. Not unfrequent in woods in the autumn.

Gregarious, globose, from the size of a pea to that of a small hazel nut, pale when young, at length purplish-red, becoming blackish in decay. The substance is firm and dense; the interior deep black, and shining. The spherules are of an oval form, and disposed in the circumference, their orifices mostly projecting in such a manner as to render the surface granulated or rather tuberculated. Sometimes, however, the spherules remain concealed, and the surface is permanently even. *Sporules* oval.

From the circumstance of this fine species varying with a nearly smooth or a highly tuberculated surface, several of the errors connected with it may have probably arisen. In its most common state, it really has a strong resemblance to a strawberry, and a very Tyro could not hesitate to refer it to its proper place. The present figure represents that state of our plant which is permanently smooth,—a state in which it is most liable to mislead, and which is probably occasioned by some cause operating to impede its growth while in the young state.

Although both WITHERING and RELHAN refer to SOWERBY's figure, I doubt whether they have the true plant in view, as their characters are not correct, and most of their synonyms wrong.

Fig. 1. *Strom. fragiformis, var. lævis, nat. size.* Fig. 2. *A plant removed.* Fig. 3. *A plant vertically divided.* Fig. 4. *A small portion of the circumference.* Fig. 5. *Sporules.—All but* Fig. 1. *more or less magnified.*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ORTHOTRICHUM SPECIOSUM.

Short-pedicelled Orthotrichum.

CLASS AND ORDER CRYPTOGAMIA MUSCI, *Linn.*—NAT. ORD. *MUSCI, Juss.*

GENERIC CHARACTER.

Seta terminalis. Peristomium simplex vel duplex; dentibus vel 8 *trilineatis, vel* 16 *unilineatis per paria approximatis; ciliis* 8 *vel* 16 *vel raro membrana erecta lacerata. Columella acuta. Calyptra mitriformis.*—HOOK. & GREV.

Seta terminal. Peristome simple or double; the outer one of 8 teeth, marked with 3 longitudinal lines, or 16 marked with 1 line, approximated in pairs: the inner one of 8 or 16 ciliary processes, or rarely of an erect, lacerated membrane. Columella acute. Calyptra mitriform.

SPECIFIC CHARACTER.

ORTHOTRICHUM speciosum; *caulibus erectis, foliis ovato-lanceolatis, acuminatis, patentibus, marginibusque ad apicem fere recurvatis; theca leviter sulcata; peristomium dentibus octo, demum sedecim reflexis; calyptra pilosa.*

O. stems erect, leaves ovate-lanceolate, acuminate, spreading, the margins recurved nearly to the summit; theca slightly sulcate; teeth of the peristome 8, at length 16 reflexed; calyptra hairy.

ORTHOTRICHUM speciosum, *Nees ab Esenbeck, in Sturm's Deutschl. Fl.—Moug. et Nestl. Pl. Exsicc.* No. 722.—*Funck, Deutschl. Moose,* p. 34. t. 23.—*Richards. in Franklin's Journ.* p. 756.—*Hook. & Grev. in Edinb. Journ. of Science,* v. 1. p. 124.

ORTHOTRICHUM striatum, *Hedw. St. Cr.* v. 2. t. 36. f. 1.–8.

HAB. On trees and rocks, but rarely on the latter (never in this country?). About Forfar, Mr DRUMMOND. It has also been found in Scotland by Mr REID. Kinordy, Messrs HOOKER and GREVILLE.

Stems 1–2 inches long, branched, erect. *Leaves* spreading, ovate-lanceolate, acuminate, the margins recurved nearly to the apex. *Theca* supported on a very short exserted fruitstalk (sometimes almost subimmersed), nearly quite even when young, but at length more or less sulcate. *Lid* shortly rostrate. *Calyptra* hairy to the very base. *Peristome* of 8 pale reflexed teeth, which at length split into 16, approaching in pairs, and 8 ciliary processes. The colour of the whole plant varies: in this country it resembles that of *O. affine* and *O. striatum;* but the specimens brought from the arctic regions were reddish-brown, and altogether more rigid and robust.

Since the very recent discovery of this species, it has been found in several remote stations, and more than once under circumstances of deep interest, as Dr RICHARDSON detected it in Arctic America, and the gentlemen of the expedition under Captain PARRY in the Island of Igloolik, (1822–3). It seems to be less frequent in this country than most of our native species: at the same time, it has probably been repeatedly overlooked for *O. affine* or *O. striatum*, both of which it resembles in size and colour. *O. speciosum* is, however, a more flaccid plant, and readily enough distinguished by the more or less exserted capsules, which are besides, more numerous than in *O. affine*. The plant figured in STURM's Flora has much shorter fruitstalks than ours, and the capsule is represented as quite smooth, so as rather to resemble *O. elegans* of SCHWAEGRICHEN. I am assured, however, by my friend NEES AB ESENBECK, to whom I communicated specimens, that ours is the true *O. speciosum*.

The recent discovery of so many additional species of *Orthotricha* in this country, is a pleasing encouragement to the cryptogamist, who, by a farther search, may, without forming unreasonable expectations, hope to add *O. obtusifolium* and *O. Sturmii* to the British Flora.

Fig. 1. *O. speciosum, nat. size.* Fig. 2. *A leaf.* Fig. 3. *Theca.* Fig. 4. *Theca in an old state.* Fig. 5. *Peristome.* Fig. 6. *Calyptra.* Fig. 7. *Portion of the peristome.* Fig. 8. *Sporules.—All but* Fig. 1. *more or less magnified.*

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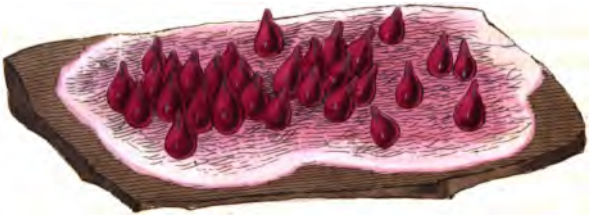

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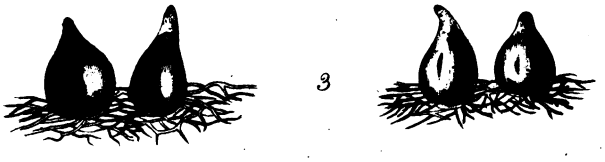

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SPHÆRIA ROSELLA.

Rose-coloured Sphæria.

CLASS AND ORDER CRYPTOGAMIA FUNGI, *Linn.*—NAT. ORD. *HYPOXYLA, De Cand. Grev.*

GENERIC CHARACTER.

Receptaculum 0. *Sphærulæ corneæ, liberæ, sessiles aut subimmersæ, sparsæ vel congestæ, ore interdum elongato, aliquando nullo; intùs massa gelatinosa sporulifera instructæ.*

Receptacle 0. Spherules corneous, free, sessile or slightly immersed, scattered or crowded, the mouth sometimes elongated, at others wanting. Interior filled with a gelatinous sporuliferous mass.

SPECIFIC CHARACTER.

SPHÆRIA rosella; *gregaria, rosea; sphærulis globoso-ovatis, subacutis vel papillatis, tomento pallidiori insidentibus.*

S. gregarious, rose-coloured; spherules ovato-globose, subacute or papillose, placed on a paler coloured web.

SPHÆRIA rosella, *Albert. et Schwein.* p. 85. t. 7. f. 3.—*Fries*, V. A. H. 1817. *Nees' Syst.* p. 85. t. 44. f. 362. β.—*Schwein. Syn. Fung. Carol.* No. 171.—*Fries, Syst. Mycol.* 2. p. 441.

HAB. Woods and damp places, growing on rotten wood, dead leaves, &c. rare. Appin, Captain CARMICHAEL. Woods about Edinburgh. Autumn.

Spreading over various substances for an inch or more in breadth. *Spherules* rose-red, numerous, minute, ovato-globose, the apex papilliform; gelatinous, at length corneous: they are seated on a stratum of laxly interwoven filaments of a pale pink colour, white towards the circumference. FRIES describes a variety in which the web and the spherules are of the same uniform rose-red colour.

An elegant and rare species, first described and figured by ALBERTINI and SCHWEINIZ in their *Conspectus Fungorum*. It is nearly allied to *Cryptosphæria aurantia*, already represented in this work. Few species of *Sphæria* are so indifferent respecting the substances on which they grow, as those of the division to which the present one belongs, viz. the *Sphæriæ Bys-*

soideæ. Several are found on decayed fungi, as *Boleti*, *Polypori* and *Agarici*, but are not confined to such a situation. *Sphæria rosella*, is found by Captain CARMICHAEL on dead specimens of *Thelephoræ*. In the neighbourhood of Edinburgh, I have usually met with it on dead sticks, beech leaves, and sometimes spreading even over the adjacent mosses, and enveloping them with its beautiful net-work. When it occurs, as it sometimes does, without spherules, it has a very anomalous appearance, and is sufficient to perplex a young botanist.

Fig. 1. *Sph. rosella, nat. size, on a species of Thelephora.* Fig. 2. *A magnified group from a piece of dead wood.* Fig. 3. *Spherules.* Fig. 4. *Contents of the spherules.* Fig. 5. *Filaments of the subjacent web.—All but* Fig. 1. *more or less magnified.*

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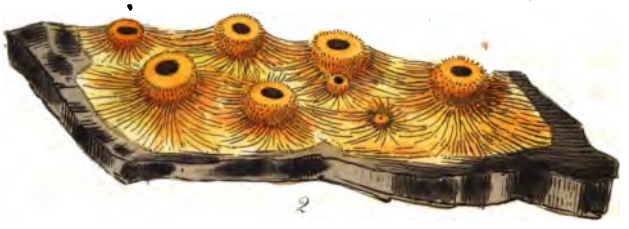

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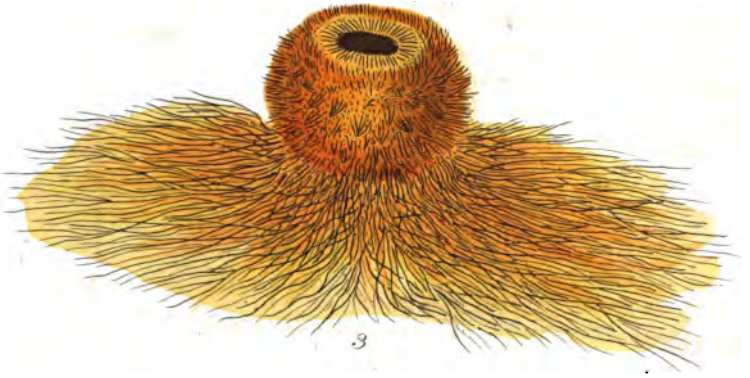

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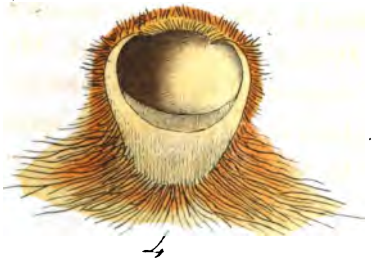

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PEZIZA WAUCHII.

Woolly Peziza.

CLASS AND ORDER CRYPTOGAMIA FUNGI, *Linn.*—NAT. ORD. *GASTROMYCI, Link, Grev.*

GENERIC CHARACTER.

Pileus stipitatus aut sessilis, plus minusve cupuliformis vel complanatus, tubulis elongatis sporuliferis in pagina superiore.

Pileus stipitate or sessile, dilated upwards into a variable cup-shaped or flattish receptacle, with tubular elongated sporuliferous cells in the upper surface or disk.

SPECIFIC CHARACTER.

PEZIZA Wauchii; *sessilis, gregaria, ovato-globosa, aurea, strigosa, ore contracto, subiculo amplo villoso dilutiori.*

P. sessile, gregarious, ovate-globose, golden-yellow, strigose, the mouth contracted, with a subjacent, spreading, woolly web, of a paler colour.

HAB. On dead wood in damp places, near the ground, or on the ground itself. Autumn. Foxhall, Captain WAUCH.

Gregarious, 1–2 lines in diameter, of a golden colour, ovate-globose, carnose, the mouth contracted, and the margin fringed with horizontal bristles: the external surface covered with rather rigid somewhat fasciculated hairs, which, towards the base, become longer, and at length pass into a fine woolly entangled mass of delicate filaments, of a yellow colour, which surround the plants for a considerable space. *Sporules* oval.

A very elegant species, and as new as it is elegant. It belongs to the second Series (LACHNEA) of FRIES: *Cereaceæ, extus pilosæ vel villosæ;* and to the seventh Section, TAPESIA, *Cupula ceracea vel coriacea, crustæ subtomentosæ insidens.* Its situation will rank next to *Peziza aurelia,* (PERS. Myc. Eur. p. 270.), a beautiful species discovered by Dr MOUGEOT.

I am happy in being able to dedicate so charming a species to my friend Captain WAUCH, to whose love of science and

ardour in this department of botany the present work is greatly indebted.

Fig. 1. *P. Wauchii, nat. size.* Fig. 2. *A group magnified.* Fig. 3. *A single plant.* Fig. 4. *A section.* Fig. 5. *Sporuliferous tubes.—All magnified except* Fig. 1.

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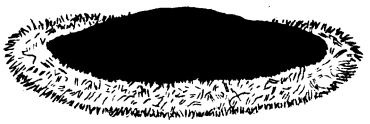

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MYROTHECIUM CARMICHAELII.

Carmichael's Myrothecium.

CLASS AND ORDER CRYPTOGAMIA FUNGI, *Linn.*—NAT. ORD. *GASTROMYCI, Link, Grev.*

GENERIC CHARACTER.

Sporangium figuræ indeterminatæ. Peridium simplex, laxe floccosum, tandem in medio evanescens. Sporulæ minutissimæ, prima ætate fluidiusculæ, dein compactæ.

Sporangium of an irregular figure. Peridium simple, filamentous, disappearing at length in the centre. Sporules very minute, somewhat fluid when young, becoming compact.

SPECIFIC CHARACTER.

MYROTHECIUM Carmichaelii; *peridio polymorpho, candido; sporulis viridibus nigrescentibus cylindricis.*

M. peridium irregular in form, white; sporules green, becoming blackish, cylindrical.

HAB. On masses of subputrescent vegetable substances. Appin, Captain CARMICHAEL.

Sporangia of various forms, 1–3 lines in length or breadth, rarely exactly circular, often irregularly sinuose, white, depressed. *Peridium* formed of an interwoven mass of fine filaments, which gradually give way, and at length altogether disappear towards the centre, leaving the mass of sporules exposed. *Sporules* forming a semifluid pulp in the young state, in the whole genus, at length compact, but not pulverulent. In the present species they are exactly cylindrical.

For the addition of this highly curious genus to the British Flora, we are indebted to Captain CARMICHAEL, whose specimens are abundantly distinct from the other two species which have been described. Of the latter, good figures have been published by STURM in his excellent little Deutschlands Flora. *M. Verrucaria*, (Ditm.) has ovate sporules. *M. inundatum*, (Tode,) has globose ones: the three species have, however, such a strong general resemblance to each other, that it is necessary

to examine them under the microscope, in order to ascertain their distinctive characters. TODE, who bestowed the generic name, has given five species, with figures, but they are without dissections, and it is now difficult, indeed perhaps impossible, to make out what he intended to represent, and his descriptions are equally vague and unsatisfactory.

Myrothecium is most nearly allied to *Trichoderma*, and differs from it, in the sporules being semifluid in their early state, in which *Myrothecium* comes far nearer than *Trichoderma* to many other *Gastromyci*. The mass of sporules in *Myrothecium* appears also to me to be eventually far more compact, and I have sometimes thought I perceived certain erect septæ or cells throughout the whole central substance, within which the sporules were situated: this, however, remains to be confirmed.

Fig. 1. *M. Carmichaelii, nat. size.* Fig. 2. *Plants, magn.* Fig. 3. *A plant removed.* Fig. 4. *A young plant.* Fig. 5. *A section, with sporules.—All except* Fig. 1. *more or less magnified,*

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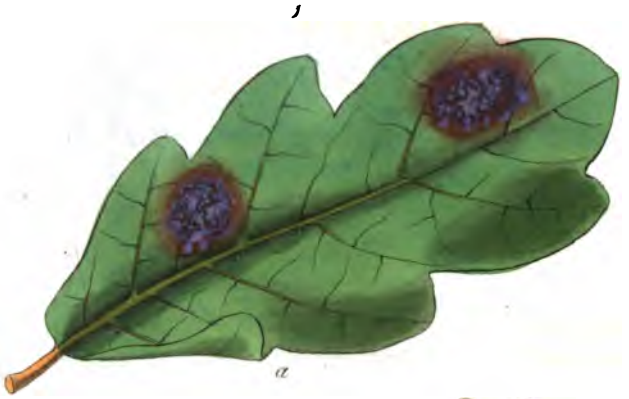

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ERINEUM GRISEUM.

Purplish-grey Erineum.

CLASS AND ORDER CRYPTOGAMIA FUNGI, *Linn.*—NAT. ORD. *GASTROMYCI, Grev.*—MUCEDINES, *Link.*

GENERIC CHARACTER.

Peridia flocciformia, subdiaphana, varia, subsimplicia, aggregato-cæspitosa, foliis vivis parasitica. Sporulæ minutissimæ, sæpissime subnullæ.

Peridia flocciform, subdiaphanous, various, subsimple, aggregato-cæspitose, parasitic on living leaves. Sporules most minute, very frequently invisible.

SPECIFIC CHARACTER.

ERINEUM griseum; *hypophyllum, late effusum, sericeum, purpurascenti-griseum; peridiis minutissimis, numerosissimis, clavatis.*

E. on the lower surface of the leaf, broadly effused, sericeous, purplish-grey; peridia excessively minute and numerous, club-shaped.

ERINEUM griseum, *Pers. Mycol. Europ.* 1. p. 8.—*Kunze, Mykol. Hefte,* 2. p. 135. —*Grev. Fl. Edin.* p. 449.

ERINEUM minutissimum, *Grev. in Edin. Phil. Journ.* v. 6. p. 81. t. 3. f. 15.

HAB. On the leaves of the Oak, not unfrequent. Spring and summer.

The first commencement of this plant is nothing more than a reddish or purplish stain on the inferior surface of the leaf. In a short time the central portion becomes developed, and assumes a grey colour, and minutely silky or rather velvety appearance. Under the microscope, the peridia are found to be of a nearly uniform shape, obtusely clavate, perfectly simple, and excessively crowded.

Like most species of *Erineum*, the present one is remarkably gregarious, and when it has once taken possession of a tree, scarcely allows a leaf to escape. The spots of aggregated plants have no determinate figure, but spread irregularly over the surface so widely as sometimes to obliterate all trace of the original colour.

Fig. 1. a, *E. griseum, nat. size.* b, *Peridia.* c, *Ditto; the two last magnified.*

ERINEUM CLANDESTINUM.

Concealed Erineum.

SPECIFIC CHARACTER.

ERINEUM clandestinum; *hypophyllum, confluens, albo-roseum demum dilute ferrugineum, plerumque margine folii involuto tectum; peridiis laxis breviter clavatis.*

E. on the inferior surface of the leaf, confluent, pinkish-white, at length pale ferruginous, generally concealed by the involute margin of the leaf; peridia lax, shortly clavate.

ERINEUM clandestinum, *Grev. in Edinb. Phil. Journ.* v. 6. p. 76. t. 2. f. 8.—*Ejusd. Fl. Edin.* p. 450.—*Kunze, Mykol. Hefte,* 2. p. 144.

ERINEUM Oxycanthæ, *Pers. Mycol. Europ.* 1. p. 145.—*Opitz, Fl. Crypt. Exsicc. Bœmiæ,* No. 7.

HAB. On the leaves of the *Cratægus Oxyacantha,* the Common Thorn tree. Spring and summer, frequent.

This plant is rarely found towards the centre of the leaf, but is almost invariably concealed by the margin, which is rolled inwards, and rendered very conspicuous from its paler colour, and diseased aspect. The *peridia* form an uninterrupted line along the margin, and grow in a lax manner. Their colour, when young, is nearly white, with a pleasant tinge of pink: in old age pale ferruginous. In form, they are not so regular as the preceding species, but are quite simple, and more or less shortly clavate.

Few species of *Erineum* are better marked by a peculiar situation than *E. clandestinum;* it is indeed far more likely to be discovered by the entomologist than the botanist, as the leaves which produce it have all the appearance of being the nidus of some insect.

We are not informed when PERSOON found this species; but M. OPITZ asserts the merit of the discovery to be due to M. JUNGBAUER, who detected it in 1819 (*Bot. Zeitung,* Oct. 1822).

Fig. 2. a, *E. clandestinum.* b, *Peridia magnified.*

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THELEPHORA QUERCINA.

Oak-branch Thelephora.

CLASS AND ORDER CRYPTOGAMIA FUNGI, *Linn.*—NAT. ORD. *FUNGI, Link, Grev.*

GENERIC CHARACTER.

Hymenium cum pileo homogeneum et concretum, papillosum vel planum, setosum vel lævе, undique fructificatione obsitum.—Pileus persistens coriaceus plerumque adnatus vel resupinatus.

Hymenium of the same substance, and not distinct from the pileus, papillose or plane, bearing minute bristles, or smooth, everywhere covered with the fructification.—Pileus persistent, coriaceous, mostly adnate or resupinate.

SPECIFIC CHARACTER.

THELEPHORA quercina; *resupinata, carnea vel dilute aurantiaca, margine demum involuto, subtus libera, nigrescens.*

TH. resupinate, flesh-colour or pale orange, the margin at length involute, black and free beneath.

THELEPHORA quercina, *Pers. Syn. Fung.* p. 573.—*Ejusd. Mycol. Europ.* 1. p. 124.—*Alb. et Schwein.* p. 276.—*Nees, Syst.* t. 34. f. 233.—*Fries, Syst. Mycol.* 1. p. 442.—*Grev. Fl. Edin.* p. 409.—*Schwein. Syn. Fung. Carol.* No. 1020.

THELEPHORA corticalis, *De Cand. Fl. Franç.* ed. 3. v. 2. p. 106.—*Ejusd. Syn.* p. 21.

THELEPHORA carnea, *Humb. Fl. Frib.* p. 106.

AURICULARIA corticalis, *Bull. Champ.* p. 285. t. 486. f. 1.—*With. Bot. Arr.* ed. 6. v. 4. p. 410.—*Relh. Fl. Cantab.* ed. 3. p. 552.—*Winch, Bot. Guide,* 2. p. 99.—*Purt. Midl. Fl.* 2. p. 681.

LICHEN carnea, *Willd. Fl. Berol.* p. 358.

HAB. On dead branches of Oak trees, frequent. The whole year.

Pileus half an inch to two inches in breadth, irregularly circular, of a thickish, somewhat brittle substance, cracking in age, and becoming involute at the margin. The inferior surface somewhat smooth, free, and at length black. *Hymenium* flesh-colour, or pale orange, unequally papillose, soft to the touch. *Sporules* globose.

Thelephora quercina is a well-marked and common species, yet no figure of it has been published in this country. It belongs, indeed, to an extensive genus, of which few were known to be British when SOWERBY published his excellent plates of *English Fungi*. In *Floræ Edinensis* I have raised the number of our species to nineteen; and Captain CARMICHAEL has discovered several others, among which are *Thelephora Padi* and *Th. pergamenea* (PERS. Mycol.)

Fig. 1. *Th. quercina, nat. size.* Fig. 2. *The under surface of the pileus represented.* Fig. 3. *Tubular thecæ and sporules.—The last figure magnified.*

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HELVELLA LEUCOPHÆA.

Crisped Helvella.

CLASS AND ORDER CRYPTOGAMIA FUNGI, *Linn.*—NAT. ORD. *FUNGI*, *Link*, *Grev.*

GENERIC CHARACTER.

Pileus submembranaceus, stipitatus, subdifformis, utrinque lævis, lateribus deflexis; cellulis elongatis sporuliferis in pagina superiore.

Pileus furnished with a stipes, submembranaceous, irregular in form, smooth on each surface, deflexed at the sides; tubular sporuliferous cells on the superior surface.

SPECIFIC CHARACTER.

HELVELLA leucophæa; *pileo deflexo, lobato, libero, crispo, pallido, subtus dilute rufescens; stipite albo, sulcato-lacunoso.*

H. pileus deflexed, lobed, free, crisped, very pale, beneath dilute reddish-brown; stipes white, furrowed and lacunose.

HELVELLA leucophæa, *Pers. Obs. Mycol.* 2. p. 19.—*Ejusd. Syn.* p. 616.—*Ejusd. Mycol. Europ.* 1. p. 210.—*Schum. Fl. Sælland*, 2. p. 410.—*Fl. Dan.* t. 1860.—*Trattin, Essb. Schwäm.* p. 168. t. DD.—*Ejusd. Dest. Schwäm.* p. 197. t. 18.—*Grev. Fl. Edin.* p. 417.

HELVELLA crispa, *Fries, Mycol.* 2. p. 14.

HELVELLA Mitra, *Sow. Fungi*, t. 39.—*Purt. Midl. Fl.* v. 3. t. 16.—Var. *alba*, *Bull. Champ.* p. 298. t. 466.—Var. *fulva*, l. c.

HELVELLA alba, *Bergm. Phytol.* t. 145.

HELVELLA albida, *Schæff. Fung.* t. 282.

HELVELLA nivea, *Schrad. Bot. Journ.* 2. p. 66.

HELVELLA lacunosa, β pallida, *Afzel. in Vet. Ac. Handl.* 1783, p. 308. *fide Fries.*

PHALLUS crispus, *Scop. Fl. Carniol.* 2. p. 475.

BOLETUS pileolo spiralibus plicis contorto, *Batt. Fung.* p. 24. t. 2. G.

ELVELLA petiolata, lamina in formam capituli, &c. *Gled. Meth. Fung.* p. 36. t. 2.

FUNGOIDES, fungiforme, crispum, laciniatum, &c. *Mich. Nov. Gen. Pl.* p. 204. t. 86. f. 7.

HAB. Shady places and in woods. Autumn. Not unfrequent in Scotland or England.

Pileus 2–4 inches broad, membranaceous, thin, smooth on both surfaces, rather brittle, deflexed at the sides, lobed, variously crisped, curled and undulated, pale, generally with a reddish tinge beneath; in most instances

the upper surface is a yellowish-white, but it occasionally varies to pale fulvous, and, according to FRIES, to flesh-colour. *Stipes* 2–8 inches high, varying much in thickness, mostly thickened at the base, white, channelled and lacunose throughout its surface and substance, of a wax-like semitransparent appearance. *Sporuliferous cells* covering the whole upper surface, and in all respects resembling those of *Helvella Mitra*.

Under *Helvella Mitra*, figured in a previous volume of this work, we noticed, that of all the figures given for that plant in this country, the greater part belonged to the species which is now represented, and accompanied, it is hoped, by such a description as will prevent all future uncertainty on the subject.

In the *Systema Mycologicum* of FRIES, the old and certainly the more appropriate name of *Scopoli* is restored. That one, however, which was bestowed by PERSOON as long ago as in his *Observationes Mycologicæ*, has become so general, from the universal diffusion of his subsequent *Synopsis Fungorum*, that it is scarcely advisable, simply on the score of so remote a priority, to change it.

This species, in common with all the rest of the genus, may be eaten with the most perfect security.

Fig. 1. *H. leucophæa, nat. size.* Fig. 2. *The stipes divided.* Fig. 3. *Sporuliferous cells, magnified.*

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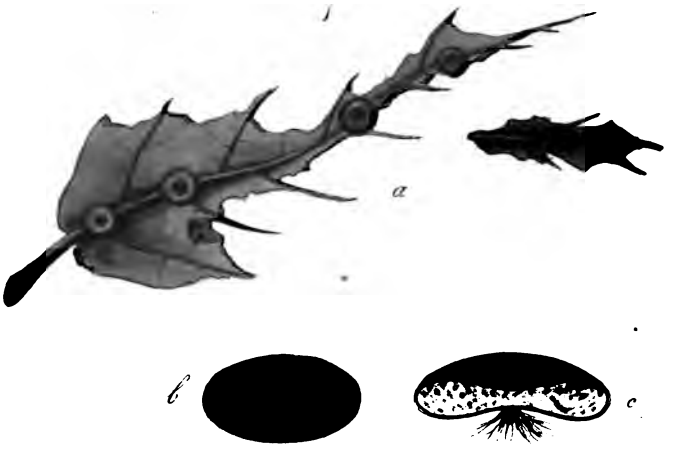

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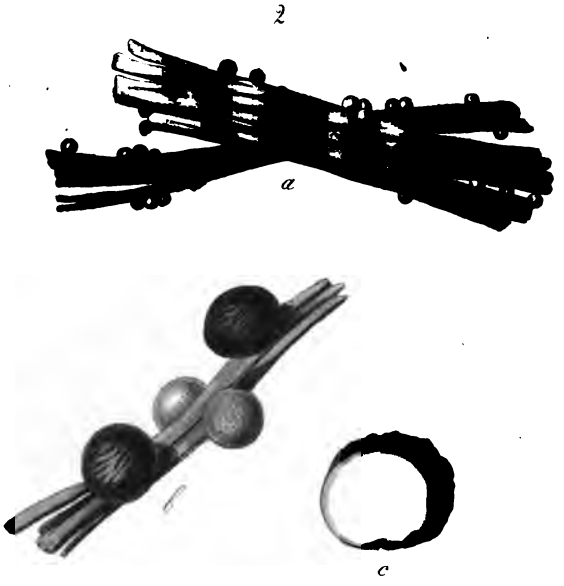

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SCLEROTIUM SCUTELLATUM.

Shield-like Sclerotium.

CLASS AND ORDER CRYPTOGAMIA FUNGI, *Linn.*—NAT. ORD. *GASTROMYCI, Link, Grev.*

GENERIC CHARACTER.

Massa subglobosa aut difformis, intus homogenea, vesiculosa, carnosa vel cornea. (Sporulæ incognitæ).

A subglobose or shapeless mass, within homogeneous, vesiculose, fleshy, or corneous. (Sporules have not been discovered).

SPECIFIC CHARACTER.

SCLEROTIUM scutellatum; *epiphyllum, orbiculare, depressum, demum centro subconcavum, inferne puncto centrale byssoideo affixum, fuscum, intus album.*

S. epiphyllous, orbicular, flattened, at length somewhat concave in the centre, fixed beneath by a central filamentous point, brown; white within.

SCLEROTIUM scutellatum, *Alb. et Schwein.* p. 74. t. 3. f. 6.—*De Cand. in Mém. du Mus. d'Hist. Nat.* 1816, p. 418.—*Nees' Syst.* t. 14. f. 139.—*Fries, Syst. Mycol.* 2. p. 248.

HAB. On the veins and petiols of the leaves of several trees, as the Oak, Ash, Sycamore, &c. Spring. Foxhall, Captain WAUCH.

Gregarious, scattered, orbicular, and much depressed, attached by a central point, or minute tuft of filaments beneath. *Colour* pale when young, at length deep brown, and eventually nearly black, white within. *Surface* smooth. *Substance* extremely tough. It has a remarkably strong smell for so small a plant, much resembling that of the large fungi.

This comparatively recently discovered species is new to the Flora of Great Britain, and has hitherto been only found by my friend Captain WAUCH. It belongs to the same tribe as *S. Semen;* and coming close together in a systematic arrangement, I have placed them on the same plate.

Fig. 1. a, *S. scutellatum, nat. size.* b, *A plant magnified.* c, *The same vertically divided.*

SCLEROTIUM Semen.

Seed-like Sclerotium.

SPECIFIC CHARACTER.

Sclerotium Semen; *liberum, sphæricum, albido-lutescens, demum spadiceum, nigrescens, et corrugatum, intus album.*

S. free, spherical, yellowish-white, at length reddish, eventually black and rugose, white within.

Sclerotium Semen, *Tode, Fung. Meckl.* 1. p. 4. t. 1. f. 6.—*Pers. Syn.* p. 123.—*Albert. et Schwein.* p. 75.—*De Cand. Fl. Franç.* v. 6. p. 113.—*Ejusd. in Mus. d'Hist. Nat.* 1816, p. 417.—*Rebent. Fl. Neomarch.* p. 361.—*Schwein. Syn. Fung. Carol.* No. 314.—*Nees' Syst.* t. 14. f. 138.

β, Brassicæ; *subimmersum intus pallidum.*

β, Cabbage-leaf variety; subimmersed, pale within.

Fries, Sclerom. Exsicc. No. 68.

Sphæria Brassicæ, *Bolt. Fung.* 119. f. 2.—*Sow. Fung.* t. 393. f. 3.—*Dicks. Pl. Crypt.* fasc. 1. p. 23.—*With. Bot. Arr.* ed. 6. v. 4. p. 471.—*Excl. syn. Hoffmanni.*

Hab. On the putrid stalks of vegetables, especially on heaps of common Potato stalks; not unfrequent. Dr Hooker. Captain Wauch. β, On the stalks and leaves of decaying Cabbages. Winter and spring.

Gregarious, globular, free, and attached by so fine a central point beneath, as to be moveable: very pale when young, at length reddish-brown, black and corrugated, very firm and tenacious, white within. The common size is that of mustard seed. β Scarcely differs except in being not quite so regularly globular, and more variable in size, being sometimes as large as a pea, according to Dickson.

Extremely like the seeds of a plant,—so much so, indeed, as to have passed among the ignorant for cabbage seeds. Variety β has a near resemblance to some states of *Sclerotium varium.*

Fig. 2. a, *Sc. Semen, nat. size.* b, *Plants magnified.* c, *One of them divided.*

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WEISSIA SPLACHNOIDES.

Splachnoid Weissia.

CLASS AND ORDER CRYPTOGAMIA MUSCI, *Linn.*—NAT. ORD. *MUSCI, Juss.*

GENERIC CHARACTER.

Seta terminalis. Peristomium simplex, e dentibus sexdecim, integris, æquidistantibus. Calyptra dimidiata.—HOOK.

Fruitstalk terminal. Peristome simple, of sixteen entire equidistant teeth. Calyptra dimidiate.

SPECIFIC CHARACTER.

WEISSIA splachnoides; *foliis lingulatis, reticulatis, apice rotundatis, nervo ante apicem evanescente; theca pyriformi, operculo conico.*

W. leaves lingulate, reticulated, the apex rounded, the nerve disappearing below the summit; theca pyriform, the lid conical.

WEISSIA splachnoides, *Thunb.* MSS.—*Schwaegr. Sp. Musc. Suppl.* p. 63. t. 17.—*Brid. Sp. Musc. Suppl.* p. 117.?—*Wahl. Fl. Lapp.* p. 326.—*Brid. Meth.* p. 45.—*Hook. & Tayl. Musc. Brit.* p. 42. t. 14.—*Hook. Fl. Scot.* 2. p. 130.—*Ejusd. in Fl. Lond. (New Series)* t. 192. *opt.*—*Funck, Deutschl. Moose,* t. 9. f. 1.

GRIMMIA splachnoides, *Smith, Engl. Bot. quoad thecas naturas; excl. descript.*

SPLACHNUM lingulatum, *Dicks. Crypt.* fasc. 4. p. 4. t. 10. f. 6.—*Smith, Fl. Brit.* p. 1177.—*Ejusd. Engl. Bot.* t. 2095.—*Brid. Sp. Musc.* v. 1. p. 143.—*Ejusd. Meth.* p. 105.

HAB. Wet boggy declivities at a considerable elevation on the Scottish mountains. "Scottish Alps," DICKSON. Ben Lawers, G. DON. Ben Lomond, D. DON. Near Loch-na-cat on Ben Lawers, Messrs HOOKER and TREVELYAN. Found on the same mountain subsequently by Mr ARNOTT; and afterwards by the same gentleman, along with Messrs HOOKER and GREVILLE, not only on Ben Lawers, but also at the base of the rocks forming the summit of Ben Cruachan and Mealgreadha, in the utmost profusion. July.

Stems 1–4 inches in length, forming dense level tufts, often of many inches in breadth, somewhat branched, decumbent, and of a rich blackish-brown at the base, above, fine deep green. *Leaves* loosely imbricated, erecto-patent, lingulate, obtuse at the apex, reticulated, the margin very entire, slightly undulated, nerve disappearing a little below the summit; those of the perichætium not differing from the cauline ones. *Fruitstalk* above an inch long, red, slightly flexuose, *Theca* erect, pyriform, greenish-brown, somewhat contracted below the middle, marking

the commencement of the *apophysis*, which does not differ in appearance from the rest of the theca. *Calyptra* pale, at first mitriform, at length dimidiate. *Lid* conical, with a very slight acumination. *Peristome* of 16 equidistant, yellow, linear-lanceolate, transversely striated teeth, united at the extremities, and each marked by a longitudinal line down the centre. *Columella* exserted, as in the genus *Splachnum*, dilated towards the mouth of the theca, and then contracted to the summit: it is frequently so attached to the lid as to retain it for a considerable period after it has separated at the mouth of the theca. *Sporules* globose, greenish, appearing dotted and reticulated under the microscope.

In regard to the history of this, one of the most interesting and rare of Scottish mosses, I feel that I cannot present my readers with one correct or more concise, than that which my friend Dr HOOKER has recently given in the New Series of the *Flora Londinensis*. "Our acute cryptogamist Mr DICKSON," says Dr HOOKER, "seems to have been the first to have discovered, in Scotland, and to have described this plant in the fourth fasciculus of his "*Plantæ Cryptogamicæ*" under the name of *Splachnum lingulatum*. The Swedish botanists next appear to have found it, and to have examined its characters; and it has appeared in different publications as the *Weissia splachnoides* of SWARTZ's MSS. (SM. *in Engl. Bot.*), of THUNBERG's MSS. (*Schwaegr.*), and of WAHLENBERG's (see *Fl. Lapp.*) SMITH, in the *Flora Britannica*, has confounded our moss with the *Splachnum tenue* (the *Splachnum longicollum* of DICKSON), and has adopted SWARTZ's name, only changing the *Weissia* into *Grimmia*. In *English Botany* the figures with the ripe capsules (received from Dr SWARTZ) will be found to belong to our plant; but the others, and especially the magnified leaf, will be recognised, at once, as belonging to the *Splachnum tenue*. At t. 2095. of the same work, our true plant appears under the name of *Splachnum lingulatum*. Lastly, it has been published by SCHWAEGRICHEN in his Supplement to HEDWIG's *Sp. Muscorum*, as *Weissia splachnoides*, a name it seems now generally to have retained."

As Dr HOOKER has already noticed, in the splendid work from which we have extracted the above account, the errors in

the representation of our plant in the *Muscologia Britannica*, and which, indeed, must be attributed to imperfect specimens, it would be needless to dwell on the subject in this place, as they will be rectified in the second edition, so anxiously expected.

A great discrepancy of opinion exists as to the genus of this moss;—there can be none as to its natural relations, which are clearly those of the Splachnoid Family. In the course of some extensive examinations of the genera of Mosses, by Mr WALKER ARNOTT and myself, we had arrived at the conclusion that it was absolutely necessary to remove this plant from the genus *Weissia*, and to form a new one, in order to receive it. Our observations, however, not having been published, the name recently proposed by Mr ROBERT BROWN * will have the right of priority. He has named his new genus CYRTODON; but his notice of it being merely incidental, and without a character, I have followed Dr HOOKER in keeping up the old name, more as a matter of convenience than from a conviction of its propriety.

Dr HOOKER has correctly observed, that there is nothing in the *calyptra* of our plant which can keep it separate from *Splachnum*, as, in most of the species of the latter genus, the calyptra eventually splits up on one side, and renders it as much dimidiate as the one in question. The greatest objection, however, to our moss being retained in the genus *Weissia*, unquestionably arises from the structure of the peristome, the teeth of which are divided by a longitudinal line to the very base, as in *Aplodon Wormskioldii* (which in fact is just as much a *Weissia* as *Weissia splachnoides*, the teeth being equidistant, and 16 in number). I am not aware of such a structure occurring in a true *Weissia*, while it approximates our plant most closely to the Splachnoid Family, where probably in no instance is it wanting, whether the teeth be equidistant or in pairs.

The *columella* only differs from that of the *Splachna*, in having a longer narrow portion above the dilated summit, which is on a level with the mouth of the theca; the narrow

* BROWN, in Suppl. to PARRY's First Voyage, p. CCXCIX. under APLODON.

portion or apiculus evidently depending for its length upon that of the operculum, to the internal apex of which it is attached, often rather permanently, as in the genus *Systylium*. When the theca is moist, none of the columella is visible, except the apiculus; but when dry, the dilated portion becomes exserted from the shrinking of the theca, and it may then be termed capitate, as in the *Splachna*.

Weissia splachnoides bears the greatest affinity with *Systylium splachnoides* of HORNSHUCH. In the fructification, this takes place in a remarkable degree, the only essential difference residing in the teeth of *Systylium*, which are geminate, —a difference, nevertheless, which must maintain their separation as long as generic distinctions are derived from the peristome.

Fig. 1. *A tuft of W. splachnoides.* Fig. 2. *Plants with young fructification, both nat. size.—The following are all magnified.* Fig. 3. *Theca with the lid.* Fig. 4. *Theca with the half-grown calyptra.* Fig. 5. *Theca with the calyptra becoming dimidiate.* Fig. 6. *A leaf.* Fig. 7. *Portion of a leaf, shewing the reticulation.* Fig. 8. *Theca dissected, with the lid still retained by the columella.* Fig. 9. *Peristome, the lid having fallen from the apex of the columella.* Fig. 10. *Portion of the peristome.* Fig. 11. *Sporules.* Fig. 12. *A theca represented in its dry state.*

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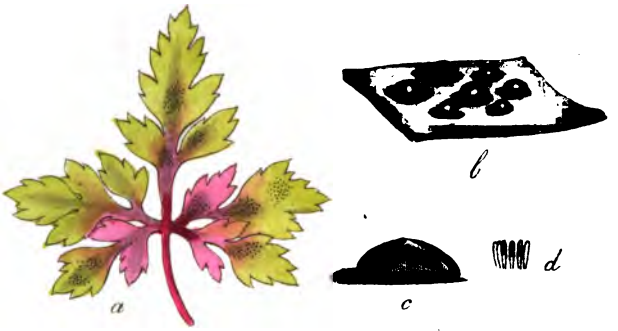

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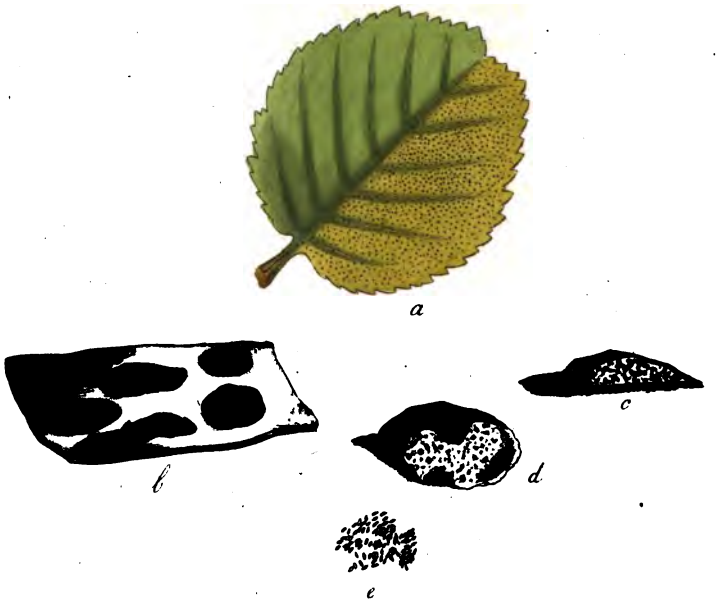

DOTHIDEA ROBERTIANI.

Shining hemispherical Dothidea.

CLASS AND ORDER CRYPTOGAMIA FUNGI, *Linn.*—NAT. ORD. *HYPOXYLA*, *De Cand. Grev.*

GENERIC CHARACTER.

" *Cellulæ (plures vel solitariæ) in stromate immersæ, subrotundæ, nucleo cereo farctæ, demum ore simplici apertæ, absque proprio perithecio.*"—FRIES.

Cellules (several or solitary) immersed in a receptacle, somewhat roundish, filled with a wax-like nucleus, at length opening by a simple orifice, without regular perithecia.

SPECIFIC CHARACTER.

DOTHIDEA Robertiani; *epiphylla, subgregaria, hemisphærica, lævis, nitida, nigerrima, intus alba.*

D. epiphyllous, subgregarious, hemispherical, smooth, shining, very black, white within.

DOTHIDEA Robertiani, *Fries, Syst. Mycol.* v. 2. p. 564.
CRYPTOSPHÆRIA nitida, *Grev. Fl. Edin.* p. 368.

HAB. On the leaves (while yet green) of *Geranium Robertianum.* Summer and autumn. Frequent in Dumfriesshire, Sir WILLIAM JARDINE. Common about Edinburgh, Messrs WAUCH and GREVILLE.

Subgregarious, in scattered clusters, never confluent, very minute, dot-like, hemispherical, very black, highly polished, smooth, white within, opening at length at the apex. *Sporules* oval, very minute, in subpersistent, erect, clavate, tubular thecæ.

A very pretty little parasite, and, as far as I have observed, entirely confined to the leaves of *Geranium Robertianum.* Though FRIES has placed it in the genus *Dothidea*, it seems equally allied to many of his *Sphæriæ* (my *Cryptosphæriæ*).

Fig. 1. a, *Dothidea Robertiani, nat. size.* b, *Plants magnified.* c, *A single one removed, ditto.* d, *Thecæ with sporules, ditto.*

DOTHIDEA ALNEA.

Alder-leaf Dothidea.

SPECIFIC CHARACTER.

DOTHIDEA alnea; *amphigena, regulariter sparsa, subrotunda, nigra, nitida, collapsa, rugoso-plicata.*

D. on both sides of the leaf, regularly scattered, roundish, black, shining, collapsed, rugose and plicate.

DOTHIDEA alnea, *Fries, Syst. Mycol.* v. 2. p. 564.

XYLOMA alneum, *Pers. Syn.* p. 108.—*Alb. et Schwein.* p. 66.—*Wahl. Fl. Lapp.* p. 524.—*De Cand. Syn. Fl. Gall.* p. 63.—*Ejusd. in Mus. d'Hist. Nat.* v. 3. No. 21.—*Moug. et Nestl. St. Exsicc.* No. 78.—*Schwein. Syn. Fung. Carol.* No. 286.—*Fries, Scl. Suec. Exsicc.* No. 288.—*Hook. Fl. Scot.* pt. 2. p. 9. *Purt. Midl. Fl.* v. 3. p. 318.—*Grev. Fl. Edin.* p. 368.

HAB. On the leaves (while yet green) of the common Alder (*Alnus glutinosa*), not unfrequent, throughout Great Britain. Autumn.

Minute, very regularly scattered over a part or the whole surface of the leaf, black, somewhat shining, roundish, depressed, collapsed and rugose. *Sporules* oblong, very numerous, naked, in a gelatinous mass.

I cannot perceive the least trace of an opening in this species at any stage of its growth, and the interior is filled with a gelatinous mass of numerous oblong sporules, wholly unmixed with filaments or tubular thecæ of any kind, in which respect it seems to differ from the character of the genus, as laid down by my indefatigable friend M. FRIES: in other respects it agrees sufficiently well. Both the above species are, I believe, figured for the first time.

Fig. 2. a, *Dothidea alnea, nat. size.* b, *Plants magnified.* c, *One divided, ditto.* d, *Another ditto, with the mass of sporules pressed out.* e, *Sporules.*

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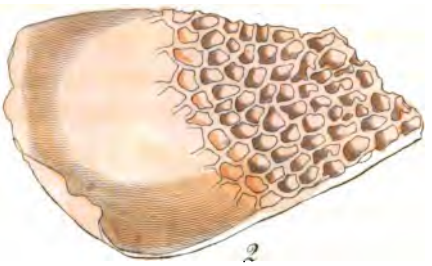

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THELEPHORA Corium.

Reticulated leathery Thelephora.

Class and Order CRYPTOGAMIA FUNGI, *Linn.*—Nat. Ord. *FUNGI, Link, Grev.*

GENERIC CHARACTER.

Hymenium cum pileo homogeneum et concretum, papillosum vel planum, setosum vel lœve, undique fructificatione obsitum. Pileus persistens coriaceus plerumque adnatus vel resupinatus.

Hymenium of the same substance, and not distinct from the pileus, papillose or plane, bearing minute bristles, or smooth, everywhere covered with the fructification. Pileus persistent, coriaceous, mostly adnate or resupinate.

SPECIFIC CHARACTER.

Thelephora Corium; *coriacea, lata, margine juniori subbyssoideo, demum libero; hymenio lævi, pallido, minute foveato-reticulato.*

Th. coriaceous, broad, margin somewhat byssoid when young, at length free; hymenium smooth, pale, minutely reticulated in a pitted manner.

Thelephora corium, *Pers. Syn. Fung.* p. 574.—*Schwein. Syn. Fung. Carol.* No. 1023.—*Grev. Fl. Edin.* p. 409.

Thelephora incarnata, var. β, *Pers. Mycol. Europ.* 1. p. 131.

Hab. On rotten wood and dead branches, in autumn and winter, rare. Woods near Edinburgh.

Pileus 2–3 inches long or more, and often nearly as broad, resupinate, byssoid at the margin when young, but afterwards entire, and more or less free at the circumference. *Colour* pale buff, in age somewhat reddish in the centre. *Substance* very leathery, flexible, tough, varying in thickness, but mostly rather thin. *Hymenium* minutely and distinctly reticulated, the spaces between the reticulations concave, irregular. *Sporules* oval.

This species seems to be of very rare occurrence, and not to have been seen by Fries, who conjectures that it may rather belong to the genera *Polysticta* or *Xylostroma*. Persoon,

who published it in his *Synopsis Fungorum*, thus described it:

> Thel. *Corium;* magna, crassa, pallida, superficie obsolete reticulata. Spithamam longa, molliuscula, amaricans, in superficie pseudòporis planis, obsoletis, sub lente conspiciendis distincta.

In the *Mycologia Europæa*, the same author has reduced this plant to Thel. *incarnata*, and even in the character of the variety has omitted to mention the reticulation of the hymenium. I have never seen the plant more than once; but the minute reticulation is so striking, that I believe I can scarcely be wrong in referring it to Thel. *Corium*, which really seems to be a very distinct species. It grows both on dead branches and on the naked wood of decayed trees.

Fig. 1. *Thel. Corium, nat. size.* Fig. 2. *A portion, magnified.* Fig. 3. *A section of a portion of the pileus, more highly magnified.* Fig. 4. *Sporules and tubular thecæ.*

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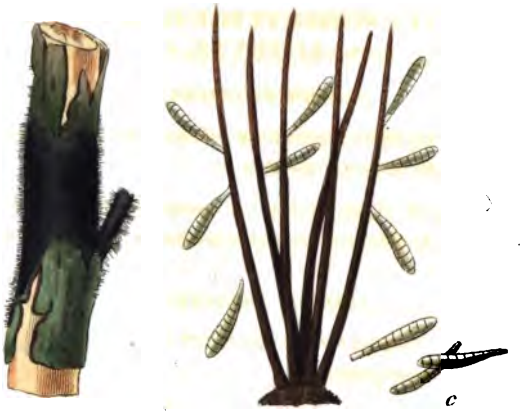

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HELMISPORIUM MACROCARPON.

Large-fruited Helmisporium.

CLASS AND ORDER CRYPTOGAMIA FUNGI, *Linn.*—NAT. ORD. *BYSSOIDEÆ, Grev.*—EPIPHYTÆ, *Link.*

GENERIC CHARACTER.

Fibræ minutæ, erectæ, rigidæ, simplices vel subramosæ, opacæ, aggregatæ. Sporidia oblongo-clavata, septata, deciduа.

Filaments minute, erect, rigid, simple or somewhat branched, opake, aggregated. Sporidia deciduous, oblong-clavate, with transverse divisions.

SPECIFIC CHARACTER.

HELMISPORIUM macrocarpon; *fibræ simplices subulatæ, subacutæ, nigerrimæ; sporidiis magnis, 5–8-septatis.*

H. filaments simple, subulate, subacute, very black; sporidia large, marked by 6–8 divisions.

HAB. On the bark of a rotten branch of some tree. Woods near Edinburgh. Autumn.

Plant spreading widely, but in a lax manner, extremely black. *Filaments* quite simple, above a line in length, subulate, rigid, polished, acute at the apex, jointed towards the summit, where they are less opake. *Sporidia* subdiaphanous, large for the size of the plant, linear-oblong, obtuse, clavate, attached to various parts of the filaments, deciduous, divided into 8–10 loculaments.

This is the largest of the genus, both in the length of its filaments and the size of the sporidia. From the decayed state of the branch on which I found it, I regret that it was impossible to ascertain the species of tree which produced it.

Fig. 1. a, *H. macrocarpon, nat. size.* b, *Filaments, magnified.* c, *Sporidia.*

HELMISPORIUM VELUTINUM.

Velvet Helmisporium.

SPECIFIC CHARACTER.

HELMISPORIUM velutinum; *fibræ aggregatæ, effusæ, subramosæ, obtusæ, nigro-olivaceæ; sporidiis pyriformibus 3–4-septatis.*

H. filaments aggregated, widely spreading, somewhat branched, obtuse, olive-black; sporidia pyriform, marked by 3–4 divisions.

HELMISPORIUM velutinum, *Link, in Berl. Mag.* v. 3. p. 10. t. 1. f. 9.—*Nees, Syst.* t. 5. f. 65. B.—*Schmidt et Kunze, Deutschl. Schwaem.* No. 74.

HELMINTHOSPORIUM velutinum, *Pers. Mycol. Europ.* 1. p. 18.

HAB. On dead branches of various trees. Woods about Edinburgh, in the autumn.

Plant of a black or olive-black colour, spreading over dead branches. *Filaments* about half a line or more in height, subsimple, sometimes a little branched, obtuse at the apex, opake, slightly flexuose. *Sporidia* pear-shaped, obtuse, subdiaphanous, divided by septæ into 4–5 loculaments.

Among all the specimens I examined (from the same branch), I could not find any which were decidedly divided; yet they agree so well with *H. velutinum* in every other respect, that I have little hesitation in referring them to that species: more especially as I have also compared them with the plant published by Doctors SCHMIDT and KUNZE in their *Deutschlands Schwaemme.*

Besides the preceding species, which I consider new, there are only five others described by PERSOON in his *Mycologia;* three of which are described by NEES AB ESENBECK, one by KUNZE, and one (the present species) by LINK. There is every reason to conclude they will be also discovered in this country.

Fig. 2. a, *H. velutinum, nat. size.* b, *Filaments, magnified.* c, *Ditto, more highly magnified.* c, *Sporidia.*

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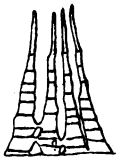

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WEISSIA LATIFOLIA.

Broad-leaved Weissia.

CLASS AND ORDER CRYPTOGAMIA MUSCI, *Linn.*—NAT. ORD. *MUSCI, Juss. &c.*

GENERIC CHARACTER.

Seta terminalis. Peristomium simplex, e dentibus sexdecim, integris, æquidistantibus. Calyptra dimidiata.—HOOK.

Fruitstalk terminal. Peristome simple, of sixteen entire equidistant teeth. Calyptra dimidiate.

SPECIFIC CHARACTER.

WEISSIA latifolia; *caule simplice brevi; foliis late et obtusissime ovatis, breviter acuminatis, conniventi-imbricatis, nervo infra apicem evanescente; theca erecto-cernua, operculo rostrato.*

W. stem simple, short; leaves broadly and very obtusely ovate, shortly acuminate, imbricated in a connivent manner, the nerve disappearing below the point; theca erecto-cernuous, lid rostrate.

WEISSIA latifolia, *Schwaegr. Suppl.* 1. p. 64. t. 18.—*Funck, Deutschl. Moose,* p. 13. t. 9.

GRIMMIA latifolia, *Web. & Mohr. Tasch.* p. 147.

HAB. Mountains of Clova, growing in a micaceous soil along with *Didymodon glaucescens* and Oxytropus campestris.* Mr DRUMMOND. Autumn 1824.

Stems scarcely more than two or three lines in length, quite simple, somewhat tufted. *Leaves* bright pale yellowish-green, fading in age to almost white, broadly and obtusely ovate, with a short, abrupt acuminate point, very concave, entire at the margin, the nerve strong, and reaching nearly to the point; they are all closely imbricated, with their summits as itwere connivent, and the whole stem thus taken with the leaves is more or less of an ovate-oblong figure. *Fruitstalk* about half an inch in length. *Theca* oblong, reddish, erecto-cernuous. *Lid* obliquely rostrate, nearly half as long as the theca. *Calyptra* dimidiate. *Peristome* of 16 pale teeth, a good deal attenuated at their apex, irregularly transversely striated, and often more or less united at their base.

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* I have to regret that due attention has not been paid by the colourer to the representation of this plant at Figs. 1. t. 127. the remarkably glaucous and pulverulent appearance which so highly characterises the foliage having been omitted.

Few of Mr DRUMMOND's numerous discoveries are more interesting than the charming moss before us. Even on the Continent, it may be said to be a recent acquisition, having been described only by Professor SCHWAEGRICHEN (whose specimens came from the Carinthian Alps), and a very few other botanists. It is also to be met with on the Alps of Switzerland, whence I possess specimens, given to me, and, if I mistake not, also gathered by my most esteemed friend Dr HOOKER.

The plants found by Mr DRUMMOND were few in number, and, unless he or some one else has the good fortune to find another station for it, it must be accounted one of the rarest mosses in Great Britain.

Fig. 1. *Weissia latifolia, nat. size.* Fig. 2. *Plants, magnified.* Fig. 3. *A leaf,* Fig. 4. *Summit of a leaf.* Fig. 5. *Portion of a theca, with the peristome.* Fig. 6. *Portion of the peristome.* Fig. 7. *Lid.—All but* Fig. 1. *more or less magnified.*

150.

CHÆTOPHORA ELEGANS.

Green globular Chætophora.

CLASS AND ORDER CRYPTOGAMIA ALGÆ, *Linn.*—NAT. ORD. *CHÆTOPHOROIDEÆ, Grev.*—ALGÆ, *Juss.*

GENERIC CHARACTER.

Massa gelatinosa, elongata vel globosa, filis ramosis, articulatis, farcta.—LYNGB.

A gelatinous, elongated or roundish mass, filled with branched articulated filaments.

SPECIFIC CHARACTER.

CHÆTOPHORA elegans; *globosa, virens, filis intra substantiam densissimis, dichotomis, fastigiatis, articulis diametro subduplo longioribus.*

CH. globose, green, the filaments densely distributed in the substance of the plant, dichotomous, fastigiate, the joints about twice as long as they are broad.

CHÆTOPHORA elegans, *Ag. Disp.* p. 42.—*Ejusd. Syn.* p. 128.—*Lyngb. Tent. Hydroph.* p. 192. t. 65.—*Grev. Fl. Edin.* p. 321.

CHÆTOPHORA pisiformis, *Ag. Disp.* p. 43.—*Ejusd. Syn.* p. 129.

RIVULARIA elegans, *Roth. Cat. Bot.* 3. p. 337.—*Smith, Engl. Bot.* t. 1797?

RIVULARIA pisiformis, *Roth. Cat. Bot.* 3. p. 338.

BATRACHOSPERMUM intricatum, *Vauch. Conf.* p. 17. t. 12. f. 2,–3.—*De Cand. Fl. Franç.* 2. p. 58.

HAB. In streams, lakes, &c. attached to aquatic plants, wood, stones, &c. Summer. Duddingston Loch, near Edinburgh, abundant.

Frond globose, mostly about the size of a small pea, but sometimes nearly as large as a hazel-nut, solid, more or less of a green colour. *Filaments* dense, numerous, radiating from the centre to the circumference, dichotomous, fastigiate, the joints about twice as long as they are broad, green in the centre, diaphanous at the articulations. *Substance* firm, (except in old large plants), and gelatinous. (Large, dark-coloured, somewhat irregular granules are scattered here and there among the filaments, to which they seem to be attached).

A pretty little plant, certainly the same as that described

by LYNGBYE; but I am by no means equally convinced of its identity with *Rivularia elegans* of English Botany.

Fig. 1. *Chæt. elegans, nat. size.* Fig. 2. *A plant, magnified.* Fig. 3. *A portion of one of the filaments.* Fig. 4. *Portion of a filament, with one of the granules, which separate into smaller portions, and apparently consist of a conglomerated mass of reproductive (?) bodies.*

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LESKEA POLYANTHA.

Creeping many-fruited Leskea.

CLASS AND ORDER CRYPTOGAMIA MUSCI, *Linn.*—NAT. ORD. *MUSCI, Juss.*

GENERIC CHARACTER.

Seta lateralis. Peristomium duplex ext. *e dentibus* 16: int. *membrana* 16-*laciniata, ciliis nullis. Calyptra dimidiata.*

Seta lateral. Peristome double: the outer one of 16 teeth, the inner one of a membrane cleft into 16 segments, without ciliary processes. Calyptra dimidiate.

SPECIFIC CHARACTER.

LESKEA polyantha; *caulibus repentibus, dense implexis, ramulis suberectis, brevibus, sericeis, filiformibus; foliis subsecundis, imbricatis, erecto-patentibus, ovato-lanceolatis, acuminatis, integris, basi obsolete binervibus; setis numerosis, thecis erectis, oblongo-ovatis, operculo acuto-conico.*

L. stems creeping, densely interwoven, branches erect, short, sericeous, filiform; leaves subsecund, imbricated, erecto-patent, ovate-lanceolate, acuminate, entire, obscurely 2-nerved at the base; fruitstalks numerous; capsules erect, oblong-ovate, the lid acutely conical.

LESKEA polyantha, *Hedw. St. Crypt.* v. 4. p. 4. t. 2.—*Sp. Musc.* p. 229.—*Web. & Mohr. Tasch.* p. 251. *cum Synon. Hedw.*—*Schwaegr. Suppl.* 1. p. 178.—*De Cand. Fl. Franç.* ed. 3. v. 2. p. 515.—*Ejusd. Syn.* p. 106.—*Moug. et Nestl. St. Exsicc.* No. 39.—*Funck, Deutschl. Moose,* p. 55. t. 36.

HYPNUM polyanthos, *Schreb. Spicel.* p. 97. *fide Hedw.*

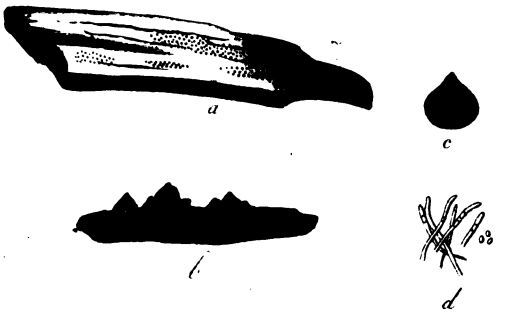
HAB. On the trunks of trees, rare. Near Forfar, Mr DRUMMOND.—It has also been found on trees at Darlington in Yorkshire, by Mr BACKHOUSE.

Stems creeping, in rather wide, depressed, and densely interwoven patches, of a deep and often yellowish-green colour, and conspicuous not only from the glossy or even silky character of the foliage, but, from the exceedingly numerous capsules. The stems are two or three inches in length, or more, closely appressed, and pretty thickly set with short filiform, suberect, nearly simple branches. *Leaves* imbricated, subsecund, erecto-patent, ovato-lanceolate, acuminate, entire, shortly and faintly 2-nerved at the base: those of the *perichætium* oblongo-lanceolate and acuminate, with mostly a few unequal denticulations towards the apex, 2-nerved at the base, more distinctly than the cauline ones. *Fruitstalk* half to one inch in length. *Capsule* erect, oblong-ovate, reddish-brown, the lid conical.

In the enumeration of the synonymes of this fine species of *Leskea*, I have been careful to introduce none that appeared to me doubtful. The plant has obviously been confounded with a variety of *Hypnum cupressiforme*, at least in this country; a fact to which Dr HOOKER and Dr TAYLOR allude in their observations on the var. γ of that moss, (Musc. Britt. p. 113.) Foreign authors, trusting to the accuracy of British botanists, have cited them as authorities, and thus increased the confusion, by communicating the sanction of their own names to the error. HEDWIG himself, and his excellent follower SCHWAEGRICHEN, are among the number. We cannot, however, be so much surprised at the latter, as he had the high authority of Sir J. E. SMITH, not only in the "Flora Britannica," but in that excellent and hitherto unparalleled work, "English Botany." SOWERBY, in the plate of *Hypnum polyanthos* of that work, has certainly not figured the inner peristome; but the operculum is evidently that of *Hypn. cupressiforme*, and agrees with the description of Mr TURNER in Musc. Hib. and with both the figure and description quoted from DILLENIUS; whereas the lid of the true *Lesk. polyantha* is merely conical, besides the peristome being truly that of a *Leskea*. WEBER and MOHR, for their British references, depend on the authority of SMITH, but express their doubts. "In Britannia fide TURN., operculo rostrato, acuto occurrit; nos semper tantum operculum conicum, breve vidimus. DILLEN. quoque illius, nec hujus, formæ exhibet. Num itaque Anglica stirps certe eadem? Qui Anglos non curantes subtiliores peristomiorum internorum (inter Leskias et Hypna) differentias norunt forte dubitabunt."

Leskea polyantha must then be regarded as an acquisition to Great Britain, and the more interesting, as it affords an opportunity of a comparison with the plant which has hitherto passed for it.

Fig. 1. *Plant, nat. size.* Fig. 2. *Portion of a plant.* Fig. 3. *Cauline leaf.* Fig. 4. *Perichætial leaf.* Fig. 5. *Capsule.* Fig. 6. *Calyptra.* Fig. 7. *Portion of the outer peristome.* Fig. 8. *Part of the inner one.* Fig. 9. *Sporules.—All except* Fig. 1. *more or less magnified.*



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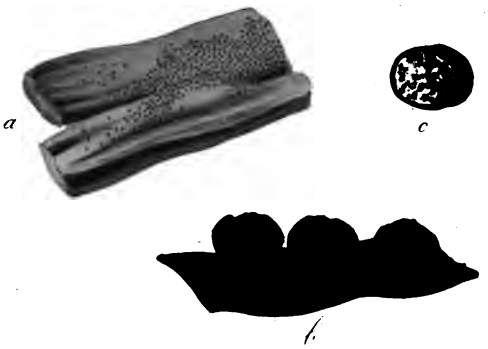

SPHÆRIA MYRIOCARPA.

Minute crowded black Sphæria.

CLASS AND ORDER CRYPTOGAMIA FUNGI, *Linn.*—NAT. ORD. *HYPOXYLA, De Cand. Grev.*

GENERIC CHARACTER.

Receptaculum 0. *Perithecia cornea, libera, sessiles aut subimmersa, sparsa vel congesta, ore interdum elongato, aliquando nullo; intus massa gelatinosa sporulifera instructa.*

Receptacle 0. Perithecia corneous, free, sessile, or slightly immersed, scattered or crowded, the mouth sometimes elongated, at others wanting. Interior filled with a gelatinous sporuliferous mass.

SPECIFIC CHARACTER.

SPHÆRIA myriocarpa; *nuda, subconferta, ovato-globosa, atra, nitida, peritheciis minimis, lævibus, astomis, demum apice pertusis.*

SPH. naked, more or less crowded, ovato-globose, black, shining, the perithecia very small, smooth, at first without an orifice, at length with a pore at the apex.

SPHÆRIA myriocarpa, *Fries, in Vet. Ac. Handl.* 1817.—*Sclerom. Suec.* No. 313. —*Syst. Mycol.* v. 2. p. 459.—*Kunze, Mycol. Heft.* 2. p. 40.

SPHÆRIA atomus, *Schum. Sœlland,* 2. p. 158.

HAB. On dead wood, posts, &c. especially when lying on the ground. Autumn. Near Edinburgh.

Perithecia crowded or somewhat scattered, minute, very black, ovato-globose, smooth, shining, remarkably neat in appearance, the apex slightly mammilliform, with a pore in old specimens. They grow perfectly naked upon the surface of the wood, never in the least immersed, and are several times smaller than the extremely common *Sphæria Pulvis-pyrius*, and a good deal smaller, also, than *S. pulveracea* and *ovoidea*, with which our present subject is nearly allied.

This minute but very neat species is here figured for the first time. FRIES seems to think that SOWERBY had the plant in view when he described and delineated his *Sph. insidens*, t. 372. f. 12. SOWERBY, however, mentions it as somewhat scabrous; and indeed his figure is too globular for our plant.

Fig. 1. a, *Sph. myriocarpa, nat. size.* b, *Perithecia, magn.* c, *A perithecium divided.* d, *The contents.*

SPHÆRIA PULVIS-PYRIUS.

Small black furrowed Sphæria.

SPECIFIC CHARACTER.

SPHÆRIA Pulvis-pyrius; *nuda, conferta, atra, peritheciis globosis, rugosiusculis, medio plerumque sulcatis.*

SPH. naked, crowded, black, the perithecia globose, somewhat rugose, more or less sulcate at the top.

SPHÆRIA Pulvis-pyrius, *Pers. Syn. Fung.* p. 86.—*Alb. et Schwein.* p. 49.—*Wahl. Fl. Lapp.* p. 521.—*De Cand. Fl. Franç.* v. 6. p. 141.—*Nees, Syst.* t. 43. p. 348.—*Schum. Sælland.* v. 2. p. 159.—*Schwein. Fung. Carol. Sup.* No. 210.—*Fries, in Vet. Ac. Handl.* 1817, p. 259.—*Sclerom. Suec.* No. 312.—*Syst. Mycol.* v. 2. p. 458.—*Moug. et Nestl. Stirp. Exsicc.* No. 381.—*Purt. Midl. Fl.* v. 3. p. 282. *(sub Sph. spermoide).*—*Hook. Fl. Scot.* pt. 2. p. 8.—*Grev. Fl. Edin.* p. 365.

HAB. On dead wood, particularly the remains of felled trees, extremely common.

Perithecia naked, extremely crowded and numerous, minute, black, irregularly globose, minutely tuberculoso-rugose, the summit mostly cleft by one or more furrows or rather gashes (if the expression be allowable), giving to the perithecium a good deal of the character of a *Hysterium*.

A well-marked species, considerably larger than the preceding, and of a more opake black. The furrowed apex of the perithecia is so remarkable, that it is alone sufficient to distinguish the plant.

My friend Mr PURTON has brought our plant as a synonym under *Sphæria spermoides*, already figured in this work. They are, however, unquestionably distinct, and *Sph. spermoides* is a great deal more rare than the subject of the present description.

Fig. 2. a, *Sph. Pulvis-pyrius, nat. size.* b, *Perithecia, magnified.* c, *A perithecium divided.*

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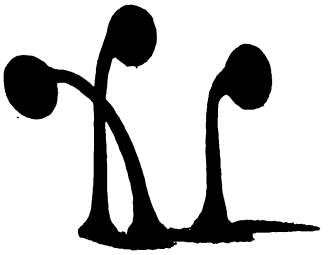

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DICTYDIUM CERNUUM.

Nodding Dictydium.

CLASS AND ORDER CRYPTOGAMIA FUNGI, *Linn.*—NAT. ORD. *GASTROMYCI, Link, Grev.*

GENERIC CHARACTER.

Sporangium globosum, minutum, Peridium simplex, membranaceum, dehiscens, e floccis innatis, reticulatum et venosum. Sporidia coacervata.

Sporangium globose, minute. Peridium simple, membranaceous, dehiscent, veined and reticulated with innate flocci. Sporidia aggregated.

SPECIFIC CHARACTER.

DICTYDIUM cernuum; *gregarium, fusco-purpureum, cernuum, umbilicatum, peridii membrana decidua, floccis persistentibus, validis.*

D. gregarious, brownish-purple, nodding, umbilicated, the membrane of the peridium deciduous, the flocci persistent, robust.

DICTYDIUM cernuum, *Nees ab Esenb. Syst.* t. 10. f. 117.

DICTYDIUM umbilicatum, *Schrad. Nov. Gen. Pl.* p. 11. t. 4. f. 6.

CRIBRARIA cernua, *Pers. Ob. Mycol.* v. 1. p. 91.—*Syn. Fung.* p. 189.—*Alb. et Schwein.* p. 104.—*Schwein. Fung. Carol. Sup.* No. 408.

MUCOR cancellatus, *Batsch, Elench. Fung.* Cont. 2. p. 135. t. 42. f. 232.

HAB. On rotten wood, occasionally. Near Edinburgh, in various situations.

Plant gregarious, stipitate, minute. *Stipes* somewhat more than a line in height, of a dark colour, smooth, straight or flexuose. *Sporangium* subglobose, mostly nodding, umbilicated, purplish-brown. *Peridium* curiously formed of a membrane intimately united with a series of longitudinal, parallel fibres, which are again connected by short transverse ones. After bursting, the membrane gradually falls away from the interstices, and leaves the mere skeleton, as it were, of the sporangium perfect, and forming a beautiful permanent reticulated case, through the openings of which the sporidia escape. *Sporidia* globose.

So highly beautiful an object as the subject of the above description, could not have remained so long unnoticed in this country, if the microscope had not been necessary for its inves-

tigation. This circumstance has, however, afforded me the satisfaction of being the first to represent it in a British publication.

In the separation of the membranaceous from the fibrous part of the peridium, this species differs from most others of the genus, which, indeed, is not a numerous one.

SCHRADER established the genus; and though PERSOON subsequently reduced it to a section of *Cribraria*, also established by the same admirable botanist, more recent observations have restored both genera to their individual rights. It is not a little in their favour that my learned friend NEES VON ESENBECK has contributed to support them.

One species of *Cribraria* is figured by SOWERBY in his English Fungi, t. 400. f. 5. under the name of *Sphærocarpus semitrichioides*.

Fig. 1. *Dictydium cernuum, nat. size.* Figs. 2, 3. *and* 4. *Plants in different stages of growth.* Fig. 5. *A sporangium.* Fig. 6. *Portions of the fibres, with sporidia.—All except* Fig. 1. *more or less magnified.*

RHIZOMORPHA DIVERGENS.

Divaricated Rhizomorpha.

CLASS AND ORDER CRYPTOGAMIA FUNGI, *Linn.*—NAT. ORD. *HYPOXYLA*, *De Cand. Grev.*

GENERIC CHARACTER.

Receptaculum elongatum, ramosissimum, lignosum vel coriaceum, intus medulla fibrosa instructum. Perithecia ramulis adnata, subglobosa? vel clavata, apice poro dehiscentia.

Receptacle elongated, very much branched, of a woody or coriaceous substance, containing a fibrous pith. Perithecia adnate with the branches, subglobose? or clavate, dehiscent by a pore at the apex.

SPECIFIC CHARACTER.

RHIZOMORPHA divergens; *cylindrica, subflexuosa, rufescens, ramis semper liberis, patentibus; peritheciis clavatis, numerosis, apicem versus albidis.*

R. cylindrical, somewhat flexuose, reddish, the branches always free, patent; perithecia clavate, numerous, whitish towards the summit.

RHIZOMORPHA divergens, *Grev. Fl. Edin.* p. 354.

HAB. Between the bark and the wood of decaying Fir trees, near the ground.

Plant extending to many inches in length, much branched, of a reddish or reddish-brown colour: *branches* spreading at right angles from the stems, elongated, somewhat flexuose, cylindrical, from 1 to 2 lines in diameter, of a substance between coriaceous and ligneous, rather fragile, but scarcely of so dry a nature as most of the other species. The *perithecia* are attached to the branches at right angles, and are very numerous, sometimes they terminate short ramuli in a clustered and fan-like manner. They are about two lines in length, clavate, slender, pale, towards the apex nearly colourless, coriaceo-carnose, and furnished at the summit with a pore: within they are more or less hollow, and contain a whitish, gelatinous mass, in which I presume the sporules are situated, though I have not been able to discover them under the highest power of the microscope.

The genus *Rhizomorpha* of ROTH, seems to be such an anomaly in every point of view in which it is considered, that I

shall not venture to make any observations upon it, until I have had an opportunity of examining a greater number of species. FRIES, in the introduction to his *Systema* (v. 1. p. xlvii.), has placed *Rhizomorpha* in the Second Order of his Second Class, which includes plants of the following description: " Fibræ genuinæ septatæ. Receptaculum nullum.—In organismis putrescentibus." According to this character, our present species ought not to be a *Rhizomorpha*. PERSOON, also, has arranged this genus among the *Trichomyci* of his last work, and positively denies that the tubercles occasionally observed on the branches are fructification. On the other hand, DE CANDOLLE affirms them to be the fructification, and moreover to be dehiscent at the apex. He therefore places it in his Order HYPOXYLA, on account of its affinity with several *Xylariæ*. A German author, also, M. ESCHWEILER, who has written a laborious essay on the fructification of the genus, is decidedly in opposition to the two first-mentioned writers, and describes tubercular fructification of several species, and gives a figure of that of *Rhizomorpha subterranea*, with dissections; from which it appears that the tubercle or perithecium is formed by the outer coat of the substance of the branch.

In the species under consideration, the fructification does not agree with the above, or any other description I have met with. The perithecia, as I have called them, seem to be supported on very short proper footstalks, and might almost pass for the commencement of young branches, were it not for their regularity and somewhat carnose appearance. Had *Rhizomorpha* been well defined, and the tubercular fructification well known and established as such, the plant here figured should have formed a new genus. At present, true science would not be forwarded by such a measure.

Fig. 1. *Rh. divergens, nat. size.* Fig. 2. *A portion of a branch, with perithecia magnified.* Fig. 3. *Perithecia dissected.*

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POLYPORUS FERRUGINOSUS.

Thin Rust-coloured Polyporus.

CLASS AND ORDER CRYPTOGAMIA FUNGI, *Linn.*—NAT. ORD. *FUNGI, Link, Grev.*

GENERIC CHARACTER.

Hymenium cum pilei substantia homogeneum et concretum, poris dissepimentis tenuibus simplicibus instructum.—Pileus subcarnosus vel suberosus, plerumque subsessilis, substantia fibrosa, sicca.

Hymenium of the same substance as the pileus, not separating from it, and furnished with pores connected by simple dissepiments.—Pileus subcarnose or corky, mostly subsessile; substance fibrous and dry.

SPECIFIC CHARACTER.

POLYPORUS ferruginosus; *resupinatus, ferrugineus, tenuissimo-filamentosus, demum reflexus vel sublateralis, pileo convexo, tenui, subtomentoso, poris inæqualibus subangulatis.*

P. resupinate, ferruginous, delicately fibrous, at length reflexed or somewhat lateral; pileus convex, subtomentose, thin, the pores unequal, somewhat angular.

POLYPORUS ferruginosus, *Fries, Syst.* v. 1. p. 378.—*Grev. Fl. Edin.* p. 402.—*Hook. Fl. Lond. (New Series)* t. 163.

BOLETUS ferruginosus, *Schrad. Spicel.* p. 172.—*Pers. Syn. Fung.* p. 544.—*Alb. et Schwein.* p. 255.—*Schwein. Syn. Fung. Carol. Sup.* No. 923.

HAB. On rotten trunks and branches of trees when lying on the ground. Autumn. Braid Hermitage.

Plant, in the first stage of existence, resembling a very delicate web of a reddish or ochrey colour, which creeps over every substance in its way, investing dead leaves, the blades of grass, &c. The *pores* commence in the centre, and, by the time the plant is mature, compose almost its whole substance. It is then of various forms, sometimes wholly resupinate, sometimes partly reflexed, at others growing immediately and horizontally from the side of a branch. *Surface* of the pileus, when exhibited, as in the latter case, somewhat rough and tomentose. *Substance* none, or extremely thin. *Pores* rather angular, very unequal, from a few lines, to nearly an inch in length. *Sporules* oval.

The commencement of this fungus probably resembles that of many other species, for we are unacquainted with the early state of a great number. The filaments which form the web alluded to in the description, are finer than those of a spider, and have not only the general appearance, but also the creeping habit of a *Conferva;* and a specimen gathered in this stage of growth, might, by a good botanist, be pronounced to belong to that genus of Algæ. In the subsequent development, no great change seems to take place in the elementary organisation; the mass of filaments becomes denser towards the centre, and the first evidence of the formation of pores is observed in a few shallow pits or cavities, which gradually assume a more determinate form, till at length they compose almost the entire plant. The oldest plants, however, when slightly macerated in water, may be reduced to their original filaments, being, however, of a darker colour, and more brittle texture. Under a high microscopical power, they are obviously jointed.

Fig. 1. *Pol. ferruginosus in its young state.* Fig. 2. *Mature plants.* Fig. 3. *A section of the pileus.* Fig. 4. *A small portion magnified.* Fig. 5. *Filaments which form the entire substance of the plant.* Fig. 6. *Sporules.*—Figs. 5. *and* 6. *also magnified.*

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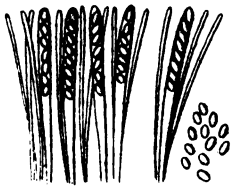

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PEZIZA RETICULATA.

Reticulated Peziza.

CLASS AND ORDER CRYPTOGAMIA FUNGI, *Linn.*—NAT. ORD. *FUNGI, Link, Grev.*

SERIES I. *Aleuria.*—TRIBE II. *Geopyxis.*—Fries.

GENERIC CHARACTER.

Pileus stipitatus aut sessilis, plus minusve cupuliformis vel complanatus, tubulis elongatis sporuliferis in pagina superiore.

Pileus stipitate or sessile, dilated upwards into a variable cup-shaped or flattish receptacle, with tubular, elongated sporuliferous cells in the upper surface or disk.

SPECIFIC CHARACTER.

PEZIZA reticulata; *magna, intus fulvo-rufescens, medio plicato, reticulato, extus albida, pruinosa; cupula margine involuta, primo integra, demum varie lacerata, subrepanda; stipite vel brevi crasso, vel subnullo.*

P. large, reddish-brown within, the centre plicate and reticulated, without whitish and pruinose; cup (or pileus) involute at the margin, at first entire, at length variously split, and somewhat spreading; stipes either short and thick, or almost wanting.

HAB. On the ground, in Spring. Foxhall, near Edinburgh, Captain WAUCH.

Plant solitary, 2–5 inches in diameter, of a reddish-brown within, whitish or brownish-white, on the outer surface, and somewhat farinose. In the young state, the cup or pileus is roundish, depressed, the margin very connivent, and the base within umbilicate and plicate. During the period of growth, the general form becomes more depressed, and a number of lacerations are produced, of which one or more often reach nearly to the centre. In the last stage, the pileus is nearly spread out on every side, so as to rest on the ground, the extreme margin, however, still retaining its involute tendency: the centre is now much reticulated with anastomosing ribs, undulate and unequal, especially when there is a stipes, from the sides being partly deplexed. *Stipes* either present or nearly wanting: when present, half an inch high or more, and nearly as thick, somewhat lacunose. *Substance* carnose, fragile, one-tenth to one-eighth of an inch thick. *Sporules* 8, oval.

After more than one careful search through the works of PERSOON, FRIES, and other mycological writers, I cannot find any description answerable to the present magnificent specimens. It is now nearly a twelvemonth since I received them from my friend Captain WAUCH, and made my drawing and description: the subsequent interval has not furnished me any information calculated to render it less interesting as a well characterised species. At first sight it seems to be nearly related to some of the section *Cochleatæ;* but the pileus, when split, has not the slightest tendency to become twisted or convolute where the laceration takes place, but, on the contrary, the substance has a different inclination, and is more or less involute from the margin.

Figs. 1, 1. *Plants, nat. size.* Fig. 2. *A young plant.* Fig. 3. *Sporuliferous tubes and sporidia.*

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ERINEUM Padi.

Bird-cherry-leaf Erineum.

CLASS AND ORDER CRYPTOGAMIA FUNGI, *Linn.*—NAT. ORD. *GASTROMYCI, Grev.*—MUCEDINES, *Link.*

GENERIC CHARACTER.

Peridia flocciformia, subdiaphana, varia, subsimplicia, aggregato-cæspitosa, foliis vivis parasitica. Sporulæ minutissimæ, sæpissime nullæ.

Peridia flocciform, subdiaphanous, various, subsimple, aggregato-cæspitose, parasitic on living leaves. Sporules most minute, very frequently invisible.

SPECIFIC CHARACTER.

ERINEUM Padi; *hypophyllum, effusum, dense aggregatum, superficiale, primo albidum, demum aurantiacum umbrinumque; peridiis clavatis subramosis vel tuberculatis, apice subtruncato.*

E. on the under surface of the leaf, effused, densely crowded, superficial, at first white, but changing to orange colour and dark brown; peridia club-shaped, somewhat branched or turberculated, the apex usually more or less truncate.

ERINEUM Padi, *Duval in Röhlg. Fl. Germ.* iii. p. 357.—*Rebent. Ind. Pl. Berol,* p. 39.—*Alb. et Schwein.* p. 371. *(in nota sub Erin. alneo).*—*Holl. et Schmidt, Deutschl. Schwaem.* No. 22.—*Kunze, Mycol. Heft.* 2. p. 144.

ERINEUM padinetum, *Fries, Obs. Mycol.* 1. p. 222.

RUBIGO Padi, *Mart. Fl. Crypt. Erlang.* p. 348.

HAB. On the leaves of *Prunus Padus,* Summer and Autumn. Woods in the Highlands, about Aviemore, and elsewhere.—It has been found in England, near Twizel House, by PRIDEAUX JOHN SELBY, Esq. and by myself in the grounds of MORTON JOHN DAVISON, Esq. of Beamish, near Newcastle.

Plant effused, in distinct roundish patches, or confluent, not immersed in the leaf in the slightest degree, whitish when young, changing gradually to orange, reddish-brown, and lastly very rich deep brown. *Peridia* polymorphous, rarely simple, but for the most part terminated by several short, obtuse processes; the main summit is often truncate.

A fine species, intermediate between those with simple, and those with branched peridia, exactly analogous to the situation of *Clavaria rugosa.*

Fig. 1. a, *E. Padi, on a leaf of Prunus Padus, nat. size.* b, *Peridia of various forms, magnified.*

ERINEUM ALNEUM.

Alder-leaf Erineum.

SPECIFIC CHARACTER.

ERINEUM alneum; *hypophyllum, plerumque effusum, grumosum, subimmersum, ex albido flavescens, vel roseum, demum fulvo-ferrugineum; peridiis apice ramosis, ramis brevibus tuberculosis.*

E. on the under surface of the leaf, mostly effused, grumose, subimmersed, changing from whitish to yellow or rose-colour, at length reddish-brown; peridia branched at the apex, the branches short, tuberculose.

ERINEUM alneum, *Pers. Syn. Fung.* p. 701.—*Mycol. Europ,* 1. p. 7.—*Alb. et Schwein.* p. 371.—*Rebent. Fl. Neomarch,* p. 396.—*De Cand. Fl. Franç.* 2. p. 593.—*Ejusd. Syn.* p. 15.—*Encyc. Meth.* 8. p. 218.—*Fries, Obs. Mycol.* 1. p. 223.—*Funck, Crypt. Gew.* ix. No. 205.—*Holl. et Schmidt, Deutschl. Schwaem.* i. No. 24.—*Moug. et Nestl. St. Crypt. Exsicc.* i. No. 99.—*Purt. Midl. Fl.* v. 3. p. 314.—*Hook. Fl. Scot.* pt. 2. p. 34.—*Kunze Mykol. Hefte,* 2. p. 145.—*Grev. in Edinb. Phil. Journ.* 6. p. 77. t. 2. f. 7.—*Fl. Edin.* p. 450.

RUBIGO alnea, *Mart. Fl. Crypt. Erl.* p. 348.—*Nees ab Esenb. Syst.* p. 64. t. 5. f. 63.

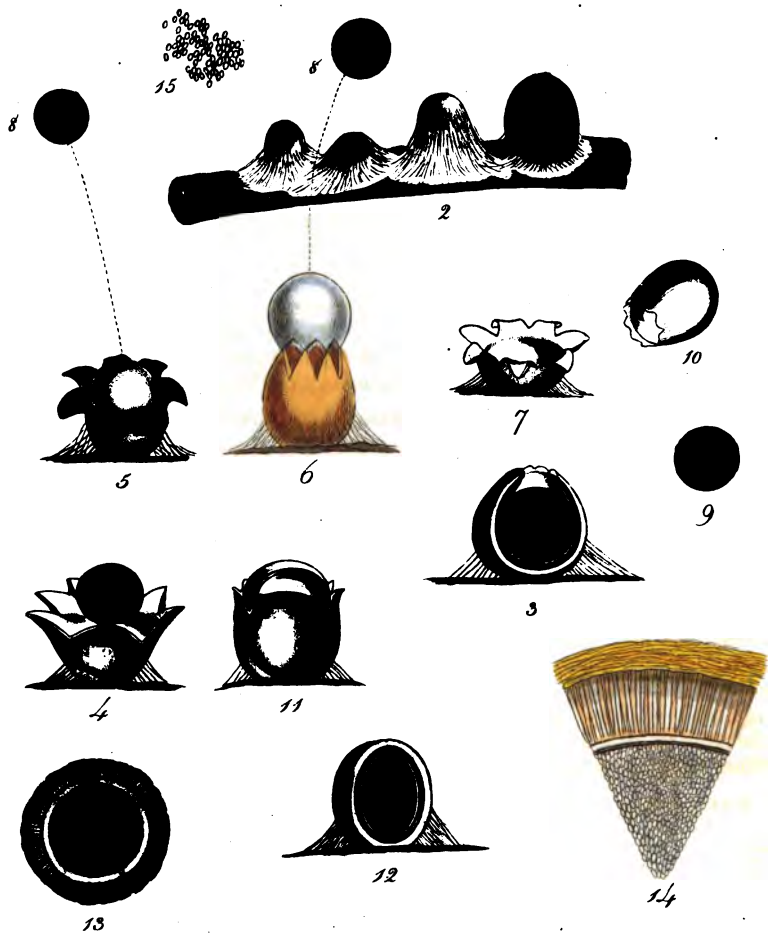
MUCOR ferrugineus, *Bull. Champ.* p. 108. t. 504. f. 12.

HAB. On the leaves of *Alnus glutinosa* (the common Alder). Frequent in Summer and Autumn. I have also received this species from my friend Dr MOUGEOT, produced on the leaf of a tree we are both unacquainted with. It was communicated to him from the south of France.

Plant in irregular patches, or confluent, somewhat sunk into a hollowed portion of the leaf, changing from whitish to yellow, and at length deep reddish-brown. Not unfrequently the second stage of colour is a whitish-pink. *Peridia* cylindrical, divided towards the summit into 2–5 short branches, studded with roundish lobes or processes.

This *Erineum* often covers the entire leaf. It is one of the most irregular species we have, in its mode of growth, to the naked eye; but under a microscope, is pre-eminently distinct, and not inelegant.

Fig. 2. a, *E. alneum, nat. size.* b, *Peridia magnified.*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SPHÆROBOLUS STELLATUS.

Star-like Sphærobolus.

CLASS AND ORDER CRYPTOGAMIA FUNGI, *Linn.*—NAT. ORD. *GASTROMYCI, Link, Grev.*

GENERIC CHARACTER.

Peridium (primo velo fugacissimo tectum) duplex; ext. carnosum, demum stellatim fissum; int. membranaceum, demum elastice inversum projiciens sporangium globosum, solidum, sporulis in medio coacervatis.

Peridium (at first covered with a very fugacious veil) double; outer one carnose, at length cleft in a stellate manner; inner one membranaceous, at length becoming elastically inverted, and projecting a solid globose sporangium, which contains a mass of sporules.

SPECIFIC CHARACTER.

SPHÆROBOLUS stellatus; *"globosus, flavo-pallescens, ore regulari stellato-dentato."*—FRIES.

S. globose, yellow, becoming paler, the orifice regular, cleft into segments in a stellate manner.

SPHÆROBOLUS stellatus, *Tode, Fung. Meckl.* 1. p. 43.—*Pers. Disp. Fung.* p. 58. *Syn. Fung.* p. 115.—*Alb. et Schwein.* p. 70.—*Fries, Symb. Gast.* p. 1.—*Syst. Mycol.* v. 2. p. 309.—*Nees, Syst.* t. 11. f. 122.—*Purt. Middl. Fl.* v. 3. p. 332. t. 30. *bona.*—*Schwein. Fung. Carol.* No. 302.

LYCOPERDON Carpobolus, *Linn. Sp. Pl.* 2. p. 1654.—*Batsch, Elench. Fung.* p. 153.—*Fl. Dan.* t. 865.—*Sow. Fung.* t. 22.—*Huds. Fl. Angl.* p. 644.—*With. Bot. Arr.* ed. 6. v. 4. p. 449.—*Winch, Bot. Guide,* v. 2. p. 105.

CARPOBOLUS albicans, *Willd. Fl. Berol.* p. 414.

CARPOBOLUS, *Mich. Gen. Pl. Nov.* p. 221. t. 101.

HAB. On rotten wood, sticks, &c. Not frequent. Appin, Captain CARMICHAEL. Foxhall, Captain WAUCH. Woods about Jardine Hall, Sir WILLIAM JARDINE and Dr GREVILLE.—In England, it has been found occasionally by Mr SOWERBY, Mr ABBOT, Mr PURTON, &c.

In the young state, this remarkable plant is completely enveloped in a fine woolly or cottony web, which is of a very evanescent nature. The young plants push through this web, and appear like smooth, yellow balls, rather larger than mustard seed, and of a firm substance when divided. In the process of development, the apex becomes dehiscent, and splits into 5–7 equal, rather acute segments, which are persistent, erect for some time, at length reflexed. Within the outer peridium which we have just mentioned, and which is of a thickish, somewhat carnose substance, is a white coloured inner one, of a membranaceous, tenacious, yet thin structure, of a globular form, in short lining the outer one, and containing a sporangium or ball of sporidia or sporules, of a brown colour and soft consistence, becoming harder and rugose in age, and strongly resembling *Sclerotium semen.*

At the time of the dehiscence of the outer peridium, the inner one (at this time concave, with its mouth uppermost), with an inconceivable rapi-

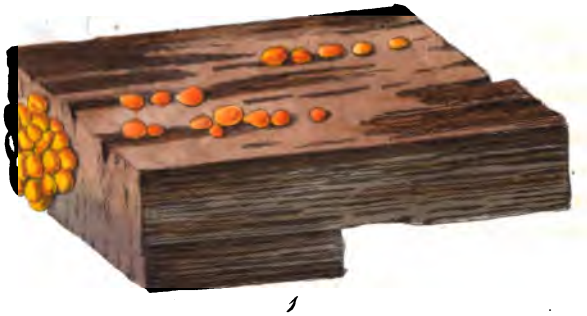
dity and force turns itself inside out, and projects the ball of sporidia to the distance of several inches, with a distinctly audible cracking noise. So great is the force with which the process is effected, that, besides projecting the ball, the inner peridium itself, somewhat resembling a balloon in miniature, is often disengaged from the outer one, instead of remaining as usual with its orifice (now undermost) attached to the margin of the outer one.

This is unquestionably the most wonderfully constructed plant which it has fallen to my lot to describe in the present publication. That so great a degree of force should exist in a body not larger than the head of a pin, and that force, too, exerted in defiance of considerable resistance, seems to surpass the power of any theory to account for satisfactorily. The resistance I have alluded to, is that which must be necessarily produced by the form of the inner peridium, which is convex downwards, at the part where the elastic force must be applied, and consequently opposes the resistance of an arch. Apparently, for the sake of facilitating the separation of the two peridia, an orange gelatinous or semifluid stratum of matter is placed between them. It is curious, that when the projection has taken place, and the inner peridium turned inside out, the orifice of the latter is considerably narrower than its base, which must also increase the quantity of resistance. It sometimes happens in weak plants, that the inner peridium is imperfectly inverted, and remains as in Fig. 5.

The first representation of this curious production is given by MICHAELI, and is singularly correct in a general point of view. Of the modern figures, that published by my friend Mr PURTON is decidedly the best.

That a great range of temperature is not prejudicial to its development, we may gather from the account in SOWERBY's English Fungi. That author found it growing on the edge of a tub of water, in a stove heated to an unusual degree. Facts like these, if accumulated, may lead to interesting conclusions.

Fig. 1. *Plants, natural size.* Fig. 2. *Young plants.* Fig. 3. *A plant divided, the ball of the sporidia remaining entire: this view is given just previous to dehiscence.* Fig. 4. *A view not to be seen in reality, but drawn to show the supposed process which projects the ball.* Fig. 5. *A rather weak plant, with the inner peridium not perfectly inverted, and the segments of the outer one becoming reflexed.* Fig. 6. *A strong plant, with the inner peridium completely inverted.* Fig. 7. *Outer peridium in age.* Figs. 8, 8*. *Balls of sporangia or sporules.* Fig. 9. *One of the same divided.* Fig. 10. *The inner peridium disengaged.* Fig. 11. *A plant with the inner peridium in the act of inversion.* Fig. 12. *A section of a plant before dehiscence.* Fig. 13. *A horizontal section.* Fig. 14. *A portion of a horizontal slice.*



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DACRYMYCES STILLATUS.

Small orange Dacrymyces.

CLASS AND ORDER CRYPTOGAMIA ALGÆ, *Linn.*—NAT. ORD. *GASTROMYCI? Link, Grev.*

GENERIC CHARACTER.

"*Receptaculum carnoso-gelatinosum, homogeneum, undique fructificans, glabrum, demum subdeliquescens. Papillæ nullæ. Contextus floccosus, floccis assurgentibus quibus sporidia interspersa.—Forma rotundata vel disciformis, vix marginata, subsessilis, superficie varia.*"—FRIES.

Receptacle carnoso-gelatinous, homogeneous, fructifying in every part, glabrous, at length deliquescing. Papillæ none. Substance filamentous, the filaments somewhat erect, with sporidia interspersed.—Form roundish or disciform, scarcely marginated, subsessile, the surface varying.

SPECIFIC CHARACTER.

DACRYMYCES stillatus; *gregarius, parvus, rotundatus, convexus, lævis, luteo-auratiacus.*

D. gregarious, small, rounded, convex, smooth, yellowish-orange.

DACRYMYCES stillatus, *Nees ab Esenb. Syst.* p. 89. t. 7. f. 90.—*Fries, Syst.* v. 2. p. 230.

TREMELLA deliquescens, *Bull. Champ.* p. 219. t. 455. f. 3.—*Rebent. Fl. Neomarch.* p. 284.—*De Cand. Fl. Franç.* 2. p. 91.—*Ejusd. Syn.* p. 19.—*With. Bot. Arr.* ed. 6. v. 4. p. 93.—*Relh. Fl. Cantab.* ed. 3. p. 509.—*Purt. Midl. Fl.* v. 3. p. 177.

TREMELLA abietina, *Pers. Obs. Mycol.* 1. p. 78.—*Syn. Fung.* p. 627.—*Mycol. Europ.* 1. p. 104.—*Alb. et Schwein.* p. 304.—*Schum. Sælland.* p. 440.—*Schwein. Syn. Fung. Carol.* No. 1149.

TREMELLA lacrymalis, *Pers. Syn. Fung.* p. 628.—*Mycol. Europ.* 1. p. 104.—*Alb. et Schwein.* l. c. p. 304.—*Schwein.* l. c. No. 1150.

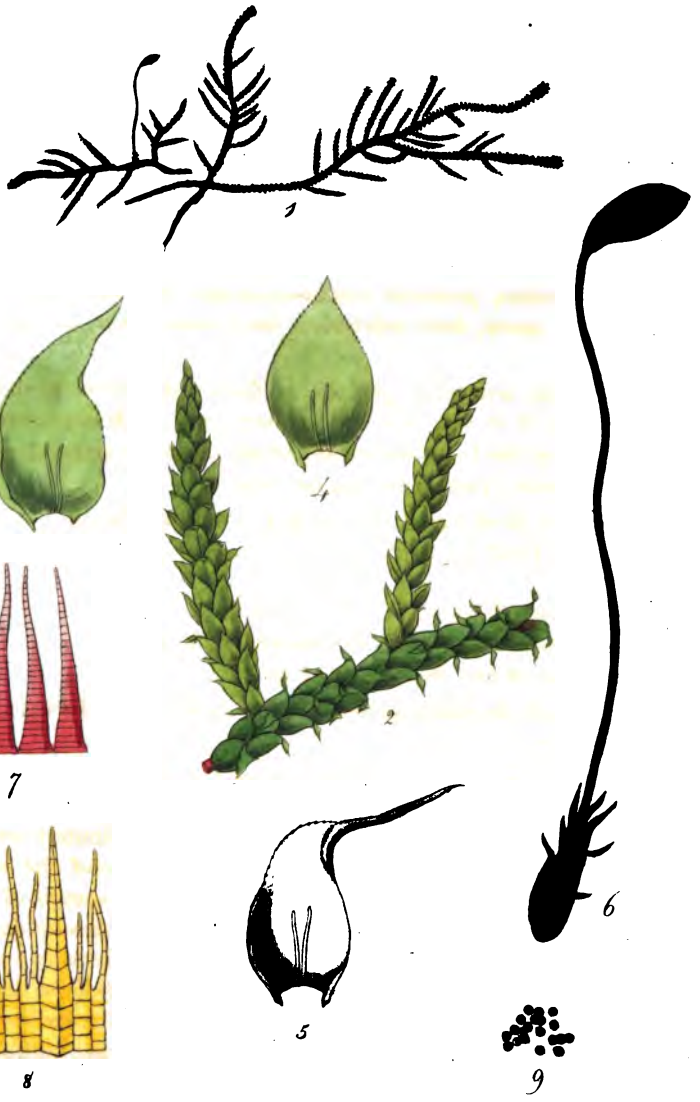
TREMELLA miliaris, *Schrank, Fl. Bav.* p. 563.

HAB. On dead wood, posts, rails, &c. very frequent. The whole year, but chiefly in the spring.

Plants gregarious, distinct, or somewhat confluent from juxtaposition, sessile or nearly so, one-tenth to one-sixth of an inch in breadth, roundish, globose or depressed, smooth, even, rather firm when young, but becoming exceedingly soft, and in age almost melting away, yielding to the slightest touch. *Colour* fine yellow or orange. *Substance* similar throughout, composed of a mass of suberect filaments, which are branched and articulated. *Sporidia* dispersed everywhere among the filaments.

It is extremely gratifying to find, that the Tremellæ, as well as other difficult tribes of cryptogamic plants, are at length beginning to have definite boundaries affixed to them. Equally unintelligible as the genus *Byssus* of authors, *Tremella* seemed for a long period to be the universal receptacle for every thing of a solid, and at the same time soft or gelatinous consistence. Not content, besides, with regarding it as a sort of hopeless accumulation of undefinable substances (to some of which the very name of plant was denied by the superstitious vulgar), one party discarded them from the Algæ, while another rejected them from the Fungi. The unfortunate Tremellæ were, in short, a stumbling-block in the path of botanical science, and it is only very recently that it has been removed, in a great measure, by judicious subdivision into new genera. One of these we have now before us, for which we are indebted to the analytical labours of Dr NEES VON ESENBECK. The genus *Dacrymyces*, besides the plant here figured, includes *Tremella fragiformis* of PERSOON, T. *moriformis* of SMITH (Engl. Bot. t. 2446.), T. *violacea* of RELHAN, T. *virescens* of SCHUMACHER, and T. *Syringæ* of the same author. All these possess the same structure, and a sufficiently satisfactory habit.

Fig. 1. *Plants, nat. size.* Figs. 2. & 3. *Plants magnified.* Fig. 4. *Filaments and Sporidia.*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HYPNUM DIMORPHUM.

Various-leaved Feather-Moss.

CLASS AND ORDER CRYPTOGAMIA MUSCI, *Linn.*—NAT. ORD. *MUSCI, Juss.*

GENERIC CHARACTER.

Seta lateralis. Peristomium duplex: ext. *e dentibus* 16: int. *membrana plicata* 16-*laciniata, ciliis alternantibus. Calyptra dimidiata.*—HOOK.

Fruitstalk lateral. Peristome double: the outer one of 16 teeth; the inner one of a plicate membrane, cleft into 16 segments, with ciliary processes between them. Calyptra dimidiate.

SPECIFIC CHARACTER.

HYPNUM dimorphum; *caule procumbente subpinnato vel fasciculato, foliis serrulatis basi binervibus, primariis cordato-acuminatis recurvis, rameis late ovatis, obtusis vel acutis, dense imbricatis; theca ovata cernua, operculo conico.*

H. Stem procumbent, somewhat pinnate, or fasciculate, leaves serrulate, (always?) 2-nerved at the base, the primary ones cordate-acuminate, recurved; those of the branches broadly ovate, obtuse or acute, densely imbricated; capsule ovate, cernuous, lid conical.

HYPNUM dimorphum, *Brid. Suppl. Musc.* 2. p. 149.—*Funck, Deutschl. Moose,* p. 64. t. 49.—*De Cand. Fl. Franç.* v. 6. p. 233.—*Moug. et Nestl. Pl. Exsicc.* No. 627.

HYPNUM diversifolium, *Schleicher, Cr. Exs. Cent.* 3. No. 45.

HYPNUM squarrosulum, *Voit, in Sturm's Deutschl. Fl.* ii. 11.

HYPNUM Halleri, var. *Schw. Suppl.* 1. pt. 2. p. 264.

HAB. On the ground, in shady places, among rocks. Ben Lawers, Mr WALKER ARNOTT.

Plant growing in lax, subprocumbent masses on the ground. *Stems* 2–3 inches in length or more, branched in a somewhat fasciculated manner, or irregularly pinnated with unequal ramuli. *Leaves* minutely serrulate, (always?) shortly 2-nerved, varying in shape: those of the *main stem* cordate-acuminate, more or less reflexed, towards the summit of the stem much longer and more recurved, giving the whole summit an incrassated appearance: those of the *ramuli* much shorter, broadly ovate, and either acute or obtuse, frequently the latter: they are besides densely imbricated, and never reflexed. The ramuli are usually attenuated. *Fruitstalk* three-fourths of an inch in length. *Capsule* ovate, cernuous. *Lid* conical.

This moss is considered to be distinct from *Hypnum Halleri*, by every author, with the single exception of Professor SCHWAEGRICHEN. There are, indeed, it must be confessed, several species of the squarrose-leaved division of *Hypnum*, which are difficult to define by written characters, and yet are never liable to be confounded with each other, when they are met with either in herbaria or in their native places of growth. Two of these species we have named; and that they *are* entitled to the rank of species, no one it is presumed can doubt, who sees them with the naked eye. Their principal discrepancies seem to exist in their habit, their stems and leaves. In H. *Halleri*, the stems are creeping, and pretty regularly pinnated. In H. *dimorphum*, they are never creeping, and very irregularly pinnated. The ramuli of the former have always recurved acuminate leaves: those of the latter are always imbricated, and never acuminate, besides which, the ramuli are generally much attenuated, a character that does not occur in the other. I shall not dwell upon any evidence to be derived from the nerves, which are notoriously variable in several species of this division. In my specimens there are two distinct ones. BRIDEL and SCHWAEGRICHEN say there is scarcely any or even none at all. Again, the precise shape of the leaves of the ramuli is not to be relied on. I found them to be simply acute, exactly as is represented in VOIT's H. *squarrulosum*, (STURM's Deutschlands Flora). It is worthy also of observation, that BRIDEL says the leaves of our plant are very entire, whereas I find them serrulate, the serratures ceasing where the acumination commences, as in VOIT's plant. On the other hand, H. *Halleri* is said to have serrated leaves, whereas all my specimens have them very entire. The last-mentioned species I hope to be able to figure in an early number, as I had the good fortune to find it in an excursion to Ben Lawers two years ago, made along with my friends Dr HOOKER and the discoverer of the present moss.

Fig. 1. *H. dimorphum, nat. size.* Fig. 2. *A portion of the stem, with ramuli.* Fig. 3. *Leaf of the main stem.* Fig. 4. *Leaf of the ramuli.* Fig. 5. *Leaf from the summit of the main stem.* Fig. 6. *Perichætium, fruitstalk, and capsule, with the lid.* Fig. 7. *Portion of the outer peristome.* Fig. 8. *Portion of the inner ditto.* Fig. 9. *Sporules.—All except* Fig. 1. *more or less magnified.*

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AGARICUS CAMPESTRIS.

Common Mushroom.

CLASS AND ORDER CRYPTOGAMIA FUNGI, *Linn.*—NAT. ORD. *FUNGI, Link; Grev.*

SERIES V. PRATELLA.—TRIB. XXII. PSALLIOTA.—*Fries.*

GENERIC CHARACTER.

Pileus stipitatus aut latere affixus, subtus lamellis sporuliferis, rectis, simplicibus. Volva nulla.

Pileus furnished with a stipes, or fixed by its side, having on the under surface straight simple sporuliferous lamellæ. Volva none.

SPECIFIC CHARACTER.

AGARICUS campestris; *pileo convexo-expanso, carnoso, sicco, subsquamoso, sericeove; lamellis liberis, ventricosis demum fuscis: stipite farcto, subæquali albo; velo annuliforme subpersistente.*

AG. pileus convex-expanded, carnose, dry, either somewhat scaly or smooth; lamellæ free, ventricose, at length fuscous; stipes solid, subequal, white; veil annular, subpersistent.

AGARICUS campestris, *Linn. Sp. Pl.* 1641.—*Fl. Suec.* 1203.—*Schæff.* t. 33.—*Fl. Dan.* t. 704.—*Vinc. Petagn.* v. 5. p. 2114.—*Scop. Carniol.* 1478.—*Huds. Fl. Angl.* p. 610.—*Pers. Comment.* p. 13.—*Syn. Fung.* p. 418.—*Sow. Fung.* t. 305.—*Bolt. Fung.* t. 45.—*Alb. et Schwein.* p. 204.—*Wahl. Fl. Lapp.* p. 528.—*With. Bot. Arr.* ed. 6. v. 4. p. 285.—*Sibth. Fl. Ox.* No. 941.—*Rehl. Fl. Cantab.* ed. 3. p. 530.—*Schwein. Fung. Carol.* No. 720.—*Tratt. Dest. Schwaem.* p. 1. t. 1. f. 1.—*Ejusd. Essb. Schwaem.* p. 70. t. L.—*Winch, Bot. Guide,* 2. p. 86.—*Paulet, Traité,* v. 2. p. 266. t. 130.—*Pers. Traité,* p. 192.—*Purt. Midl. Fl.* v. 2. p. 638.—*Hook. Fl. Scot.* pt. 2. p. 21.—*Grev. in Wern. Trans.* v. 4. p. 354.—*Fries, Syst.* v. 1. p. 281.—*Grev. Fl. Edin.* p. 390.

AGARICUS edulis, *Bull. Champ.* t. 134. & t. 514.—*Pers. Comment.* p. 123.—*Syn.* p. 418.—*De Cand. Fl. Franç.* ed. 3. v. 2. p. 157.—*Ejusd. Syn.* p. 32,—*Nees, Syst.* t. 24. f. 195.

AGARICUS alutarius, *Pers. Syn.* p. 265.

AGARICUS, sp. xxi. a, b, c, *Gled. Meth.* p. 116.

FUNGUS pileolo lato et rotundo, *Batt. Fung.* p. 29. t. 7. f. A,-C.

FUNGUS campestris, albus superne, inferne rubens, *Mich. Gen. Pl. Nov.* p. 174. t. 75. f. 1,-3.—*Raii, Syn.* p. 2.

HAB. Pastures and meadows, very frequent. May to October.

Plant mostly gregarious, without odour, but with a grateful flavour. *Pileus* hemispherical, at length convex, and eventually plane, fleshy, 2–5 inches broad or more, white, or of a reddish tinge, or even uniform light brown: the surface is either smooth, slightly scaly, or, (in the

brown variety), more or less covered with prominent scales, formed partly of the substance of the plant, partly of hair-like fibres from the epidermis. *Flesh* soft, white, sometimes changing to a light reddish hue on being divided. *Lamellæ* numerous, free, broad, ventricose, of a brittle substance, fine pink, red or flesh colour, becoming dark vinous, fuscous, or even nearly black. *Stipes* firm, solid, 2–5 inches high, but mostly short, thick, white, sometimes rather bulbous at the base. *Veil* annular, white, variable, but mostly subpersistent.

This highly esteemed fungus, the Common Mushroom of this country, the *Champignon* of the French, and *Prataiolo* of the Italians, was well known to the ancients, as might have been proved by numerous synonyms, had our limits allowed of their introduction. It will suffice here to mention, that it is the Μυκης ἐδωδιμος of DIOSCORIDES, the *Callus rubens* of PLINY, *Prateolus* of CÆSALPINUS, &c.

On the Continent, where a number of different kinds of fungi are constantly consumed as regular articles of diet, we would naturally expect a variety of provincial names for the different species. Accordingly, for the present species, we have, besides Champignon, the following names:—*Paturons, Potirons, Envinassas, Cabalas, Champignons des près, Champignons du fumier, Champignons de couche*, &c. The neighbouring and equally wholesome species, *Ag. Georgii*, has often been confounded with the present one, but is called universally in France *Boule de neige*. If the reader wishes to form an idea respecting the almost incredible extent to which the eating of fungi is carried in different parts of Europe, he will find much information upon the subject in PAULET's Traité des Champignons; PERSOON, Sur les Champignons comestibles; two works published by TRATTINICK in Germany, and in Professor PALLAS' Voyage dans plusieurs Provinces de l'Empire de la Russe, vol. i.

The Common Mushroom is found throughout the whole of Europe, even in Lapland: as far as Japan in Asia, on the authority of THUNBERG; in Africa (Barbary), DESFONT. Atlant. p. 433.: and in America, according to MUHLENBERG and Dr SCHWEINITZ.

Fig. 1. *A mature plant, dissected, nat. size.* Fig. 2. *Sporules, magnified.*—*The other figures represent the plant in different ages.*

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PEZIZA Persoonii.

Persoon's Peziza.

Class and Order CRYPTOGAMIA FUNGI, *Linn.*—Nat. Ord. *FUNGI, Link, Grev.*

Series III. Phialea.—Trib. IX. Hymenoscyphæ.—*Fries.*

GENERIC CHARACTER.

Pileus stipitatus aut sessilis, plus minusve cupuliformis vel complanatus, tubulis elongatis sporuliferis in pagina superiore.

Pileus stipitate or sessile, dilated into a more or less cup-shaped or flattish receptacle, with tubular elongated sporuliferous cells in the upper surface or disk.

SPECIFIC CHARACTER.

Peziza Persoonii; *cupula ceracea, glaberrima, urceolata, aurantiaca, margine prominente, membranaceo, pallido; stipite cylindrico roseo.*

P. cup (or pileus) smooth, urceolate, orange colour, with a prominent, membranaceous, pale margin; stipes cylindrical, pink.

Peziza Persoonii, *Moug. in Pers. Mycol. Europ.* 1. p. 288. t. 12. f. 1.—*Fries, Syst. Mycol.* v. 2. p. 121.

Peziza Equiseti, *Fries*, MSS.

Lycoperdon Equiseti, *Hoffm. Veg. Cr.* II. p. 17. t. 5. f. 1.

Hab. Bogs and moist places, parasitic on dead stems of various species of *Equisetum*. Autumn. Duddingston Loch, near Edinburgh, abundantly.

Very small, gregarious. *Pileus* or cup roundish, urceolate, a line at most in diameter, often less, smooth, wax-like, semipellucid, fine orange colour, with a membranaceous whitish margin, which is erect and prominent, and in old specimens often lacerated or irregular. *Stipes* scarcely a line high, cylindrical, smooth, pale rose-pink, attenuated at the base. *Sporidia* oval.

This exceedingly beautiful and uncommon species has been named after the Father of systematic Mycology, the celebrated Persoon, by my excellent friend Dr Mougeot. Thus distinguished, it appeared in Persoon's Mycologia Europæa, and soon after in the second volume of the hitherto unrivalled Sys-

tema Mycologicum of FRIES. It ought to be mentioned, however, that this latter botanist had also found it, and named it in his MS. *P. Equiseti*, being willing to retain the specific name bestowed upon the plant by HOFFMANN, who had previously described it as a *Lycoperdon*. That HOFFMANN had done so, seems to have escaped PERSOON altogether, since he has published it as a new plant.

Its duration is, I apprehend, short, but all seasons seem nearly indifferent to it. FRIES mentions it as occurring in spring and summer, and I have found it plentifully in the autumn.

Fig. 1. *P. Persoonii, nat. size.* Fig. 2. *A group magnified.* Fig. 3. *Young plant.* Fig. 4. *A mature plant.* Fig. 5. *A mature plant, of a different form.* Fig. 6. *A plant dissected.* Fig. 7. *Sporuliferous cells.* Fig. 8. *Sporidia.—All except* Fig. 1. *more or less magnified.*

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ENCALYPTA RHAPTOCARPA.

Striated alpine Encalypta.

CLASS AND ORDER CRYPTOGAMIA MUSCI, *Linn.*—NAT. ORD. *MUSCI*, *Juss.* &c.

GENERIC CHARACTER.

Seta terminalis. Peristomium simplex, dentibus sedecim. Calyptra campanulata, lævis, thecam maturam includens.

Fruitstalk terminal. Peristome single, of 16 teeth. Calyptra campanulate, smooth, inclosing the mature capsule.

SPECIFIC CHARACTER.

ENCALYPTA rhaptocarpa; *foliis oblongis, acutis, nervo percurrente vel excurrente; theca recte striata.*

E. leaves oblong, acute, with a percurrent or excurrent nerve; capsule striated in a straight manner.

ENCALYPTA rhaptocarpa, *Schwaegr. Suppl.* 1. p. 56. t. 16.—*Sturm, Deutschl. Fl. with a fig.*—*Funck, Deutschl. Moose*, p. 12. t. 7.

ENCALYPTA ciliata, *γ*, *Hook. & Tayl. Musc. Brit.* p. 36.

HAB. Near the summits of various mountains in Scotland. It has been collected by Dr HOOKER and myself, and I believe also by other botanists, on several elevated ranges in Breadalbane, especially on Ben Lawers, Craig Challioch, and Mealgreadha. Mr DRUMMOND has also recently communicated it from the Mountains of Clova, where it seems to be produced sparingly.

Stems half an inch to one inch in height, branched, green above, reddish-brown below, growing in a dense manner in the crevices of rocks. *Leaves* oblong, acute, entire, somewhat waved at the margin, the nerve either reaching to the summit or passing beyond it into a hair-like subdiaphanous point. When moist, the leaves are erecto-patent; when dry, erect, appressed, involute at the margin, not much twisted, and rather rigid in appearance. *Fruitstalk* half an inch or more in length. *Capsule* cylindrical, oblong, straight, very distinctly marked with somewhat prominent, longitudinal (not spiral) striæ. *Lid* about half as long as the capsule. *Peristome* of 16 rather narrow teeth, pale at the points, red below, more or less persistent. *Calyptra* cylindrical-campanulate, mostly with the base irregular, and as if slightly torn, and exhibiting the remains of such processes or appendages as occur in *E. ciliata.*

Of the six species of *Encalypta* which have been described by botanists, there are three which very evidently possess a striated capsule. One of these is beautifully distinguished by the striæ being spirally arranged. The remaining two, are *E. rhaptocarpa* of SCHWAEGRICHEN, and *E. pilifera* of FUNCK. I do not possess satisfactory specimens of the latter; but, judging from the immature individuals published in my copy of FUNCK's beautiful "Deutschlands Moose," I am induced to regard it as a variety of *E. rhaptocarpa*, more especially as the main difference seems to consist in the one having a persistent the other a fugacious peristome, a character scarcely sufficient of itself to constitute a specific distinction. SCHWAEGRICHEN, indeed, describes the nerve in the leaves of *E. rhaptocarpa* as disappearing below the apex; but in his magnified figure of the summit of one of the leaves (l. c. t. 16. f. 6.), it is represented as reaching to the very point, which I have always found to be the case, and often seen it considerably excurrent, in Irish, Scottish, Icelandic, and German specimens. In this respect, then, it does not differ from *E. pilifera*. As to the excurrent nerve being diaphanous or coloured, I do not find either of these characters to be sufficiently permanent to deserve much confidence.

With the authors of the Muscologia Britannica, I agree entirely, that no importance is to be placed upon the absence of the appendages at the base ef the calyptra; for, though they are most frequently wanting, yet traces of them are sometimes to be distinctly seen. The striated capsule seems to afford the best specific mark, and it is surely a satisfactory one, as the striæ are fully as evident in the scarcely mature capsule as in age, when the whole is collapsed. In many instances (probably usually), the striæ are of a different colour from the rest of the capsule.

Fig. 1. *E. rhaptocarpa, nat. size.* Fig. 2. *A plant magnified.* Fig. 3. *A lower leaf.* Fig. 4. *An upper leaf.* Fig. 5. *Peristome.* Fig. 6. *Portion of the peristome.* Fig. 7. *Calyptra.* Fig. 8. *Sporules.—All the figures except* 1. *more or less magnified.*

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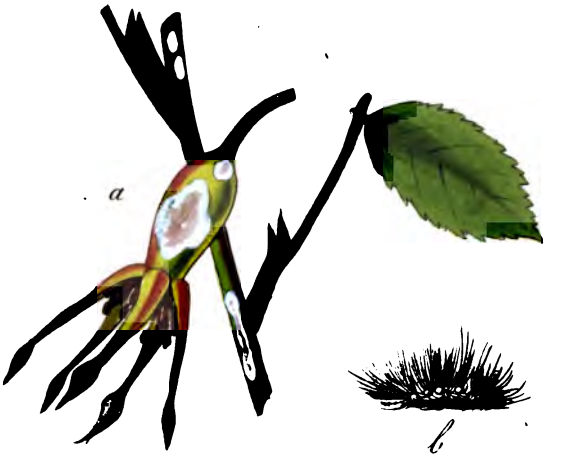

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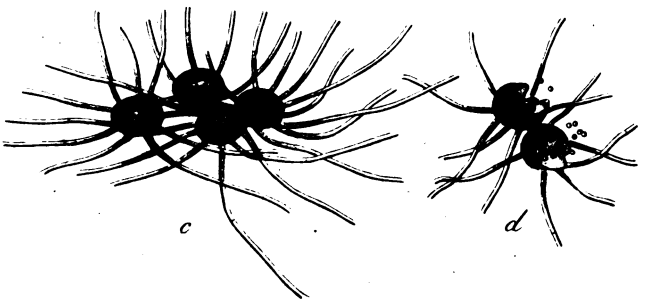

c d

EUROTIUM Herbariorum.

Yellow Eurotium.

Class and Order CRYPTOGAMIA FUNGI, *Linn.*—Nat. Ord. *GASTROMYCI, Link, Grev.*

GENERIC CHARACTER.

Sporangium globosum, sessile, floccis basi adnatum. Peridium membranaceum. Sporidia nuda coacervata.

Sporangium globose, sessile, adnate beneath, with floccose filaments. Peridium membranaceous. Sporidia naked within the peridium.

SPECIFIC CHARACTER.

Eurotium Herbariorum; *gregarium, punctiforme, luteum; floccis albidis ramosis.*

E. gregarious, punctiform, yellow; filaments whitish, branched.

Eurotium Herbariorum, *Link, in Berl. Mag.* v. 3. p. 31. t. 2. f. 44.—*Nees, Syst.* p. 25. t. 8. f. 91.

Mucor Herbariorum, *Wigg. Hols.* p. 111.—*Pers. Syn.* p. 202.—*Alb. et Schwein.* p. 112.—*De Cand. Fl. Franç.* v. 6. p. 100.—*Schwein. Fung. Carol.* No. 427.

Monilia nidulans, *Roth. Fl. Germ.* 1. p. 559.

Mucor globosus flavus, *Hall. Enum. Helv.* 8.

Mucor luteus globosus, in basi tomentosa sessilis, *Gled. Meth. Fung.* p. 162.

Hab. On leaves and stems of dried plants, when exposed to damp, very frequent.

Gregarious, very minute, bright yellow, smooth, globose, sessile. *Peridium* membranaceous. *Subjacent filaments* whitish, branched, spreading, jointed. *Sporidia* globose, naked, lying in a mass within the peridium.

It is rather singular, that a plant so extremely liable to infest the herbarium as *Eurotium Herbariorum*, has so long remained unnoticed in all our British works on natural history; for I cannot, even under the name of *Mucor*, find the least trace of it. Plants communicated from foreign countries, if exposed to damp during the voyage, are often nearly covered with it.

Fig. 1. a, *Eurotium Herbariorum, nat. size.* c, *Plants magnified.*

EUROTIUM Rosarum.

Rose-branch Eurotium.

SPECIFIC CHARACTER.

Eurotium Rosarum; *cæspitosum; peridiis gregariis, viridescentibus floccis tectis; floccis elongatis, simplicibus profusis, medio ascendentibus.*

E. tufted; the peridia gregarious, greenish, covered by the filaments; filaments elongated, simple, profuse, somewhat erect in the centre.

Hab. On the branches, petiols and capsules of living plants of various species of Rose. Summer, extremely frequent about Edinburgh.

Tufts from a line to a quarter of an inch broad, sometimes confluent, depressed, silky, creeping at the margin, white, at length tinged with brown in the centre. *Peridia* greenish, sessile, globose, numerous, very minute. *Filaments* numerous, enveloping the peridia, and rising above them, simple, elongated, jointed.

A new species, having much of the habit of a *Mucor*, or rather of a *Sporotrichum*. The genus, however, is very satisfactorily ascertained by microscopical investigation. Its growth is rapid, and it speedily extends itself when once in possession of a rose-bush.

Fig. 2. a, *Eurotium Rosarum, nat. size.* b, *Part of a tuft, magnified.* c, *Peridia and filaments separated.* d, *Peridia opened.*

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SPATHULARIA FLAVIDA.

Yellow Spathularia.

CLASS AND ORDER CRYPTOGAMIA FUNGI, *Linn.*—NAT. ORD. *FUNGI, Link, Grev.*

GENERIC CHARACTER.

Pileus compressus, distinctus, latere utrinque in stipitem decurrens, superne fructificatione tectus.

Pileus compressed, distinct, decurrent on each side, covered above with the fructification.

SPECIFIC CHARACTER.

SPATHULARIA flavida.

SPATHULARIA flavida, *Pers. Comment.* p. 34.—*Disp. Meth. Fung.* p. 36.—*Syn. Fung.* p. 610.—*Mycol. Europ.* 1. p. 197.—*Alb. et Schwein.* p. 295.—*De Cand. Fl. Franç.* ed. 3. v. 2. p. 95.—*Ejusd. Syn.* p. 19.—*Link, in Berl. Mag.* v. 3. p. 40.—*Schmidt et Kunze, Deutschl. Schwaem.* No. 194.—*Fries, Syst. Mycol.* v. 1. p. 491.—*Hook. Fl. Scot.* pt. 2. p. 80.—*Nees, Syst.* t. 17. f. 156.

SPATHULARIA rufa, *Nees, Syst.* t. 17. f. 156. B.

HELVELLA spathulata, *Fl. Dan.* t. 658.—*Sow. Fung.* t. 35.—*Purt. Middl. Fl.* v. 3. p. 452.

HELVELLA feritoria, *Bolt. Fung.* t. 96.

CLAVARIA Spathula, *Fl. Dan.* t. 658.—*Dicks. Fasc.* 1. p. 21.—*With. Bot. Arr.* ed. 6. v. 4. p. 431.—*Relh. Fl. Cantab.* ed. 3. p. 562.

CLAVARIA spathulata, *Schmied. Icon.* t. 50. f. 1.

ELVELLA clavata, *Schæff. Fung.* t. 149.

HAB. Woods in the autumn, growing among mosses and dead leaves: most frequent in Fir-woods. Dougalston wood, HOPKIRK. Flisk wood, Rev. Dr FLEMING and Mr NEILL. Near Jardine Hall, Sir WILLIAM JARDINE, Bart. and Dr GREVILLE. Woods in the Highlands. Fir-woods near Arlary, Kinross-shire.—It has been frequently found in England by Mr BROWN, Dr WOODWARD, Dr WITHERING, Mr PURTON, and others.

Plants mostly gregarious, about 3–5 inches high, of a fleshy brittle substance. *Stipes* 2–4 inches long, yellowish-white, slightly rugose, usually with a fine cavity, attenuated at the base, more or less undulating, varying in thickness from less than $\frac{2}{3}$ths to $\frac{5}{8}$ths of an inch. *Pileus* an inch long or more, and often nearly an inch in breadth, yellow, rare-

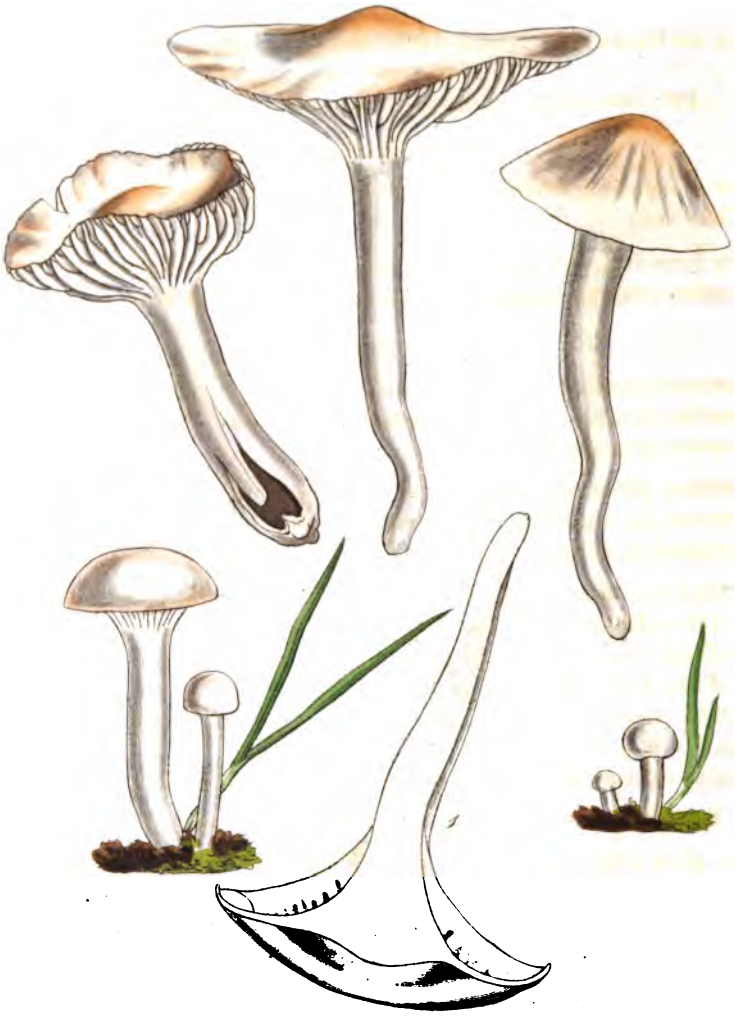
ly reddish, much compressed, more or less of an erect, obovate form, slightly inflated, undulated, or even lacunose, and sometimes bifid, or inclining to be lobed. It is generally placed in some degree obliquely on the stipes, with its base attenuated and decurrent down the sides of the stipes; in other words, the stipes appears to pass along and eventually penetrate the pileus, half-way or more towards the summit. The pileus is hollow; and the hymenium which covers its surface, discharges the sporules from their cells in the same elastic manner as that of *Helvella* and *Peziza*.

Spathularia is separated from the genus *Geoglossum*, chiefly on account of the difference in the form of the clavula or pileus. Besides this, it must be confessed there is so great a discrepancy in habit and substance, that the latter circumstance alone is sufficient to convince any one of the propriety of keeping them distinct.

I have seen so many varieties of this plant, that I fully accord with Fries in regarding *S. rufa* as a variety only, and a variety indeed not so well marked as to demand being established under any particular name, for every intermediate state may be frequently observed.

WITHERING has our plant still as *Clavaria Spathula;* the name by which it was introduced by DICKSON to our Flora, who adopted it from the Flora Danica. *Helvella clavata* of DICKSON and of WITHERING, doubtfully referred by some authors to *Spathularia*, unquestionably belong to *Leotia lubrica*, already figured in this work.

Fig. 1. *Plants of different ages, nat. size.* Fig. 2. *A plant dissected.* Fig. 3. *Thecæ, or cells of the sporidia; the latter could not be detected in the present specimens.*



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AGARICUS VIRGINEUS.

White Agaric.

CLASS AND ORDER CRYPTOGAMIA FUNGI, *Linn.*—NAT. ORD. *FUNGI, Link, Grev.*

DIV. LEUCOSPORUS CLITOCYBE, *Fries.*—SECT. IX. OMPHALIA, *Pers.*

GENERIC CHARACTER.

Pileus stipitatus aut latere affixus, subtus lamellis sporiferis, rectis, simplicibus. Volva nulla.

Pileus furnished with a stipes, or fixed by its side; bearing on the under surface straight, simple, sporuliferous lamellæ. Volva none.

SPECIFIC CHARACTER.

AGARICUS virgineus; "*candidus; pileo tenui humido, convexo, dein umbilicato, lamellis decurrentibus, venoso-connexis, distantibus; stipite fistuloso tenui, deorsum attenuato.*"—FRIES.

AG. white; pileus thin, humid, convex, at length umbilicate; lamellæ decurrent, connected by rugose veins, remote; stipes hollow, slender, attenuated downwards.

AGARICUS virgineus, *Wulf, in Jacq. Misc.* 2. t. 15. f. 1.—*Pers. Syn. Fung.* p. 456.—*Alb. et Schwein.* p. 219.—*De Cand. Fl. Franç.* ed. 3. v. 2. p. 168.—*Ejusd. Syn.* p. 34.—*Sow. Fung.* t. 32.—*Schwein. Fung. Carol.* No. 773.—*Fries, Syst. Mycol.* v. 1. p. 100.

AGARICUS niveus, *Scop.* 2. p. 230.—*Schæff. Fung.* t. 232.—*With. Bot. Arr.* ed. 6. v. 4. p. 291.

AGARICUS ericeus, *Bull. Champ.* t. 188.—*Schum. Sæll.* p. 266.

HAB. Pastures and heaths in the autumn, very common.

Whole plant white. *Pileus* 1–2 inches broad, at first convex, at length umbilicate, or with the margin curved upwards, smooth, moist, firm, yellowish in old age. *Flesh* thin, except in the centre, white. *Lamellæ* decurrent, distant, rather thick, about four in a set. *Stipes* about two inches long, 2–4 lines thick, white, smooth, firm, attenuated downwards, mostly more or less hollow, but sometimes solid, nearly straight.

Agaricus virgineus agrees in so many points with some varieties of *Ag. eburneus*, that it is difficult to affix a satisfactory boundary to either species. In deference, however, to my

excellent friend M. FRIES, I have adhered to his view, and retained his character of the present species; which seems chiefly characterised by its thinner pileus, curved upwards in age, and mostly hollow stipes attenuated downwards. Our plant, as figured in the annexed plate, will be readily recognised as extremely abundant in lawns and pastures in the autumn, when it is conspicuous from its pure white hue.

According to DE CANDOLLE and PERSOON, it is an edible species, and known in some parts of France by the name of *Petite oreillette*. BULLIARD observes, that in others it bears the name of *Mouseron*: it does in reality resemble the true *Mouseron* more than any other. There is no doubt of its being perfectly destitute of any pernicious property.

Fig. 1. *A plant divided.* Fig. 2. *Sporules.—The other figures represent the species in different states.*

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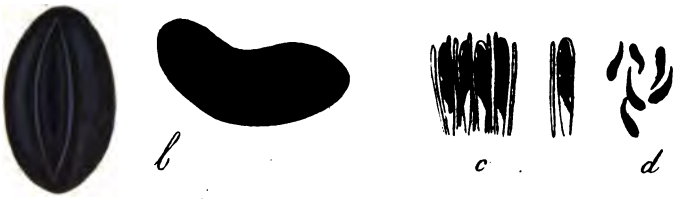

b c d

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a b c

HYSTERIUM PULICARE.

Obtuse Hysterium.

CLASS AND ORDER CRYPTOGAMIA FUNGI, *Linn.*—NAT. ORD. *HYPOXYLA, De Cand. Grev.*

GENERIC CHARACTER.

Crusta nulla. Perithecium plerumque oblongum, corneum, rima longitudinali dehiscens. Sporulæ in tubulis hyalinis, elongatis, erectis, gelatinosis.

Crust none. Perithecium mostly oblong, corneous, bursting by a longitudinal slit. Sporules contained in hyaline, elongated, erect, gelatinous tubes.

SPECIFIC CHARACTER.

HYSTERIUM pulicare; *superficiale, ellipticum oblongumve; obscure longitudinaliter striatum, atrum, labiis obtusis, disco lineari.*

H. superficial, elliptical or oblong, obscurely longitudinally striated, black, lips obtuse, disk linear.

HYSTERIUM pulicare, *Pers. Disp. Meth. Fung.* p. 5.—*Syn.* p. 98.—*Icon. Pictæ*, p. 21. t. 9. f. 2.—*Alb. et Schwein.* p. 55.—*De Cand. Fl. Franç.* v. 2. p. 307.—*Syn.* p. 64.—*Wahl. Fl. Lapp.* p. 523.—*Schleich, Pl. Exsic.* No. 362.—*Moug. et Nestl. St. Crypt. Exsicc.* No. 266.—*Nees, Syst.* t. 39. f. 302.—*Schwein. Fung. Carol.* No. 237.—*Hook. Fl. Scot.* pt. 2. p. 8.—*Fries, Syst.* v. 2. p. 579.—*Scl. Suec. Exsicc.* No. 91. & 61.—*Grev. Fl. Edin.* p. 366.—*Schmidt et Kunze, Deutschl. Schwaem.* No. 158.

HYSTERIUM pedicellatum, *Schum. Sæll.* 2. p. 153. *fide Fries.*

HYSTERIUM læve? *Pers. Icon. Pictæ*, p. 22. t. 9. f. 3.

HYSTERIUM Juglandis? *Schwein. Fung. Carol.* No. 242.

LICHEN scriptus, β, *Lightf. Fl. Scot.* v. 2. p. 801.

LICHEN No. 7. *Mich. Gen. Pl.* p. 102. t. 54. f. 2.

HAB. On dead portions of the trunks of various trees, frequent.

Black, scattered or crowded, lying in all directions on the surface of the bark or wood, not in the least immersed, varying considerably in form and in size, mostly elliptical, obtuse, very convex, obscurely striated, the orifice linear, rarely at all dilated, and the margins (or lips) rounded. The *thecæ* or hyaline tubes contain 3–4 pyriform bodies, of a yellow colour, divided transversely by several articulations.

As this species not unfrequently occurs on the crusts of lichens, it is liable to be mistaken for a plant of that order of vegetables, unless carefully examined. The perithecia are remarkably prominent, and scattered about in a most irregular manner, as represented in the Plate. I do not find the contents of the perithecia described, and they are quite erroneously delineated in the figures already published.

It is very doubtful whether this species has been found in

England, as all the notices I can find respecting it must be referred unquestionably to *Hyst. Fraxini.* WITHERING has fallen into a strange mistake, and not only confounds it with *Sphæria sulcata* of BOLTON, but makes it his *Lichen tricolor* in an old state, and observes, moreover, that it has the crust of a *Lichen*, the cup of a *Peziza*, and the capsule of a *Sphæria!*

Fig. 1. a, *H. pulicare, nat. size.* b, *Perithecia, magnified.* c, *and* d, *Thecæ and sporidia.*

HYSTERIUM LINEARE.

Linear Hysterium.

SPECIFIC CHARACTER.

HYSTERIUM lineare; "*subimmersum, confertum, parallelum, lineare, nigrum, labiis tumidulis, lævibus, disco lineari.*"—FRIES.

H. subimmersed, crowded, parallel, linear, black, lips of the orifice tumid, smooth, disk linear.

HYSTERIUM lineare, *Fries, in Vet. Ac. Handl.* 1819. *et in Mycol. Hefte,* 2. p. 60.—*Syst. Mycol.* v. 2. p. 583.

HYSTERIUM angustatum, *Pers. ex Moug. et Nestl. Pl. Exsicc.* No. 563. *(non Syn. Fung.?)*—*Nees, Syst.* t. 39. f. 303.

HAB. On the dead portions of the wood of various trees, not rare.

Subimmersed, dull black, gregarious, often much crowded, sometimes confluent, parallel, 1–2 lines or more in length, very narrow, linear, rounded at the extremities, disk narrow, linear, the lips rounded, smooth. The perithecia are generally surrounded by a very thin blackish crust, if that may be so termed which appears to be a mere stain upon the wood.

Hysterium angustatum of PERSOON's Synopsis Fungorum is considered by FRIES as rather belonging to the variety *angustatum* of H. *pulicare*, especially as the former author has not stated the perithecia to be subimmersed, and because the specimens published as *angustatum* by MOUGEOT and NESTLER (but which are the true *lineare*) have a mark of doubt attached to them. In all this, I have followed my able friend M. FRIES. It remains only to be observed, that the black ground or crust is not always present in so evident a degree as in the specimens given in the excellent work above alluded to.

Fig. 2. a, *H. lineare, nat. size.* b, *Perithecia, magnified.* c, *Thecæ.*

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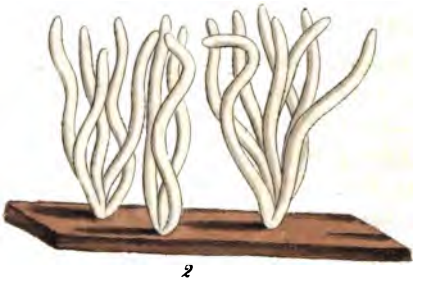

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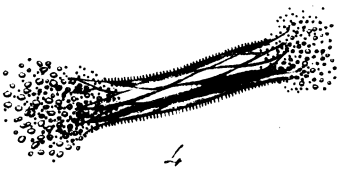

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CERATIUM HYDNOIDES.

Hydnoid Ceratium.

CLASS AND ORDER CRYPTOGAMIA FUNGI, *Linn.*—NAT. ORD. *BYSSOIDEÆ, Grev.*—MUCEDINES, *Link.*

GENERIC CHARACTER.

"*Stroma elongatum, ramosum, membranaceum, plicatum, floccis inspersum simplicibus. Sporidia floccis insidentia.*"—LINK.

Stroma elongated, branched, membranaceous, plicate, with scattered, simple filaments. Sporidia lying among the filaments.

SPECIFIC CHARACTER.

CERATIUM hydnoides; *congestum; stroma erectum, subconfluens, ramis simplicibus vel divisis, sæpe fasciculatis.*

C. crowded; stroma erect; subconfluent; branches simple or divided, often fasciculate.

CERATIUM hydnoides, *Alb. et Schwein.* p. 358. t. 2. f. 7.—*Link, in Berl. Mag.* v. 3. p. 20. t. 1. f. 33.—*Nees, Syst.* t. 7. f. 82.—*Schwein. Fung. Carol.* No. 1291.—*De Cand. Fl. Franç.* v. 6. p. 11.—*Pers. Mycol.* v. 1. p. 43.—*Grev. Fl. Edin.* p. 466.

ISARIA mucida, *Pers. Comment.* p. 100.—*Syn. Fung.* p. 688.

RETICULARIA hydnoides, *With. Bot. Arr.* ed. 6. v. 4. p. 460. *fide Purt.*—*Purt. Midl. Fl.* v. 2. p. 704.

CLAVARIA byssoides, *Sow. Fung.* t. 335.

CLAVARIA Puccinia, *Batsch. Elench. Fung.* p. 139.—*Mich. Gen. Nov. Pl.* t. 92. f. 2.?

PUCCINIA byssoides, *Gmel. Syst. Nat.* 2. p. 1462. *fide Pers.*

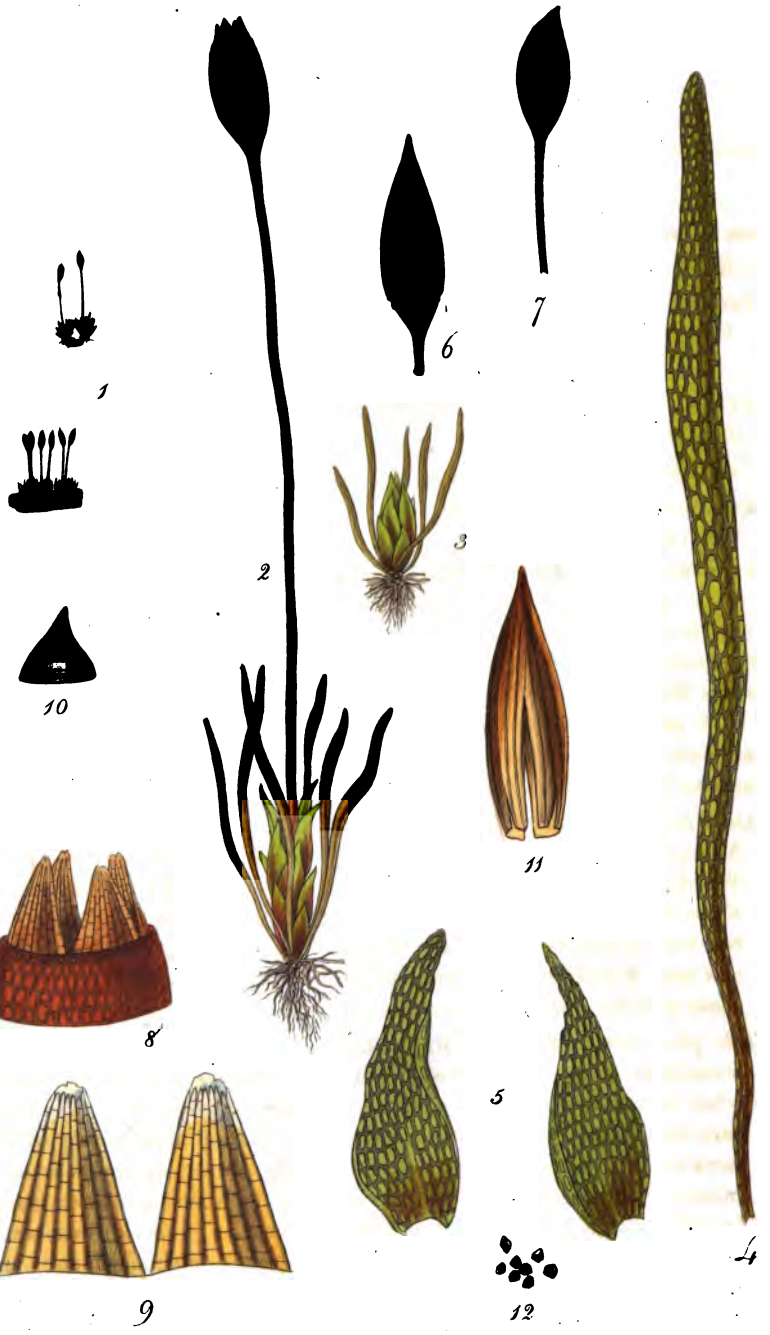
HAB. On rotten wood, rarely on mosses, dead leaves, &c. Spring to Autumn.

Plant about a line in height, of a yellowish-white colour, crowded in small tufts, and mostly confluent at the base. The whole of each plant may be considered as a stroma, or general receptacle, which is elongated, and either nearly simple or variously branched: when branched, it is often divided in a somewhat palmate or fasciculate manner, the branches being mostly quite simple, and obtuse at the apex, and beset, as is the whole plant, with minute bristles, whose use seems to be, to disperse the sporidia with an elastic force. The substance is gelatinous. The structure seems to consist of a gelatinous mass, mixed with minute bodies, inclosed and supported by a plicate, fibrous membrane, of exceed-

ing tenuity, from which the bristly short filaments arise among which the sporidia are dispersed. On exposing the plant to moisture, it expands, and falls away to a mere pellicle, setting at liberty the sporidia and the filaments, with a quantity of very minute bodies. *Sporidia* globose, glistening.

The present genus was instituted by ALBERTINI and SCHWEINITZ in their excellent *Conspectus Fungorum*, upon *Isaria mucida* of PERSOON; besides which they have added two other new species. It differs most strikingly from *Isaria* in the plicate membranaceous stroma, and, according to the above authors, also in the property of scattering its sporidia with elastic force. The sporidia themselves are remarkable for possessing a glistening appearance, which is perfectly obvious under a pocket magnifier.

Fig. 1. *Ceratium hydnoides, nat. size.* Fig. 2. *Plants magnified.* Fig. 3. *A plant branched in a fasciculated manner.* Fig. 4. *A portion of the stroma exposed to moisture.*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TETRAPHIS BROWNIANA.

Linear-leaved Tetraphis.

CLASS AND ORDER CRYPTOGAMIA MUSCI, *Linn.*—NAT. ORD. *MUSCI, Juss. &c.*

GENERIC CHARACTER.

Seta terminalis. Peristomium simplex, quadri-dentatum, dentibus erectis. Calyptra mitriformis.

Fruitstalk terminal. Peristome simple, four-toothed, teeth erect. Calyptra mitriform.

SPECIFIC CHARACTER.

TETRAPHIS Browniana; *caule subnullo; foliis linearibus, perichætialibus ovatis; theca ovata.*

T. stem very short; leaves linear; perichætial ones ovate; capsule ovate.

TETRAPHIS Browniana, *Grev. Fl. Edin.* p. 230.—*Drummond, Musc. Scot.* v. 2. No. 13.

TETRAPHIS ovata, *Hook. & Tayl. Musc.. Brit.* p. 17. t. 8.—*Hook. Fl. Scot.* pt. 2. p. 124.—*Fl. Lond. New Series,* t. 114.—*Smith, Compend.* ed. 3. p. 163.—*Hobs. Musc. Brit.* v. 1.

TETRODONTIUM Brownianum, *Schwaegr. Supp.* II. p. 102. t. 129.

BRYUM Brownianum, *Dicks. Crypt. Fasc.* 4. t. 10. f. 16.—*Brid. Musc. Recent.* v. 2. pt. iii. p. 62.

ORTHOTRICHUM Brownianum, *Smith, Fl. Brit.* p. 1269.

GRIMMIA Browniana, *Smith, Engl. Bot.* t. 1422.

HAB. Roslyn Woods, by the river side, Mr R. BROWN. Bilston Burn, Mr MAUGHAN. Near Kirkcaldy, Mr CHALMERS. Arniston and Auchindenny Woods, Messrs ARNOTT and GREVILLE. Rae-hills Woods, Dumfriesshire, Sir WILLIAM JARDINE, Bart. and Dr GREVILLE.—In England, it has been found by the late Dr BRUNTON near Rippon, and by Mr HOBSON near Manchester. In Ireland, by Dr TAYLOR near Dublin. In all these stations, I believe, the rocks on which it occurs are of sandstone.

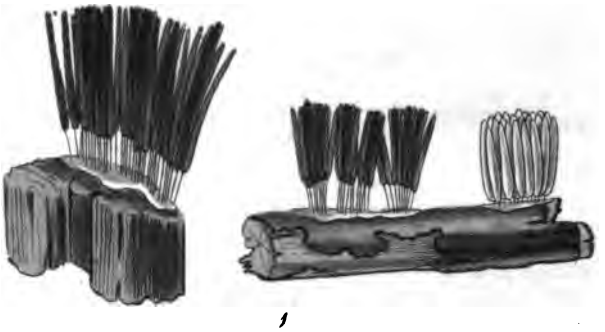
Whole plant not half an inch in height. *Stems* extremely short, yet occasionally divided. *Leaves* few, linear, erect, slightly flexuose, and somewhat incrassated upwards, reticulated, dark olive-green. *Perichætial ones* imbricated, more numerous than the cauline ones, mostly of the same colour, ovate, concave, the apex either obtuse, or somewhat acuminate, reticulated, furnished at the base with an indistinct, short, broadish nerve. *Fruitstalk* 3 or 4 lines in length. *Capsule* ovate, small, reddish-brown. *Peristome* of 4 broad, erect teeth, each of which is, under a good microscope, obviously marked with 7 longitudinal striæ. *Lid* conical, shortly and obliquely acuminate. *Calyptra* linear-campanulate, striato-sulcate, reddish-brown, sometimes with one or two lateral clefts.

Until a recent period, this very curious moss was confounded with *Tetraphis ovata* of FUNCK, and accordingly our excellent countryman ROBERT BROWN, Esq. was supposed only to have discovered the first British station for it. He must now, however, be regarded as having added a new species to a very limited and highly interesting genus. *Tetraphis ovata* in reality is destitute of the linear leaves so conspicuous in our plant, and which, when it spreads over the surface of the rock, in its usual manner, produce a bristly appearance altogether peculiar. It is worthy of notice, that our present species is never found on the upper horizontal surface of the rock, very rarely indeed on the perpendicular face, but abundantly on the roofs and slanting sides of large cavities, crevices, and often from beneath projecting masses, growing with its head downwards.

One of the most curious circumstances connected with the genus to which our moss belongs, is, that Mr BROWN has observed the four teeth of the peristome to be marked with seven longitudinal lines, thereby indicating the real number to be thirty-two, " a structure contributing," as he justly observes, " to fix the place of *Tetraphis* in the natural series between *Splachnum* and *Orthotrichum*," (*Linn. Trans.* v. xii. p. 579.) To the latter it is brought still nearer by its furrowed calyptra.

SCHWAEGRICHEN, in the second Part of his second Supplement, just published, has placed this moss, together with T. *ovata* and *repanda*, in a new genus, which he calls *Tetrodontium*. His character rests upon the dioecious gemmiform flowers, and triangular teeth of the peristome: the latter, it must be confessed, is too artificial to be admitted. We regret, that, considering the very great dissimilarity of the habit of T. *pellucida*, and of the mosses we have mentioned, that we cannot at present, consistently with our ideas of bryology, follow the example of our worthy friend.

Fig. 1. *Plants, nat. size.* Fig. 2. *A plant magnified.* Fig. 3. *A young plant.* Fig. 4. *Leaf.* Fig. 5. *Perichætial leaves.* Fig. 6. *Capsule with calyptra.* Fig. 7. *Capsule, with operculum.* Fig. 8. *Peristome.* Fig. 9. *Two of the teeth of the peristome.* Fig. 10. *Lid.* Fig. 11. *Calyptra.* Fig. 12. *Sporules.*



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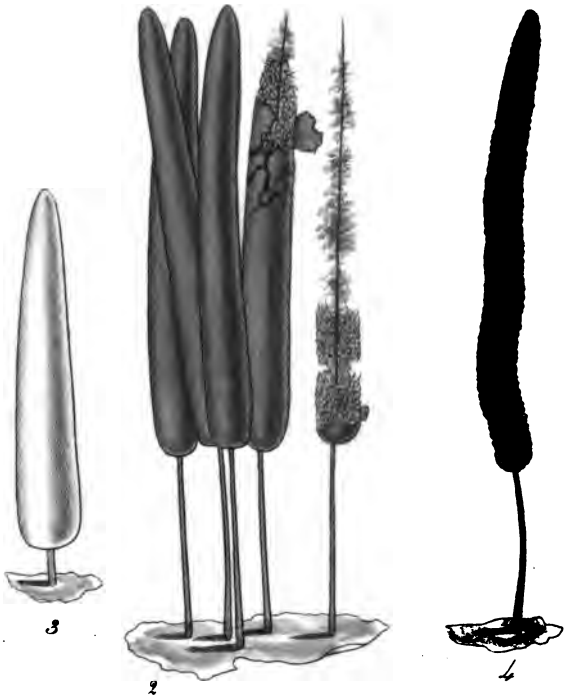

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STEMONITIS FASCICULATA.

Dark linear Stemonites.

CLASS AND ORDER CRYPTOGAMIA FUNGI, *Linn.*—NAT. ORD. *GASTROMYCI, Link, Grev.*

GENERIC CHARACTER.

Sporangium cylindricum aut subglobosum, stipite intrante. Peridium simplex membranaceum fugax. Flocci capillitium reticulatum formantes, stipiti inhærens. Sporidia inspersa.

Sporangium cylindrical or subglobose, penetrated by the stipes. Peridium simple, membranaceous, fugacious. Filaments forming a reticulated mass, adhering to the stipes. Sporidia scattered among the filaments.

SPECIFIC CHARACTER.

STEMONITES fasciculata; *cæspitosa, conferta, elongata, linearis, subattenuata, purpureo-fusca, peridio omnino evanescenti.*

ST. tufted, crowded, elongated, linear, subattenuated, purplish-brown, the peridium wholly vanishing.

STEMONITES fasciculata, *Pers. Obs. Mycol.* 1. p. 56.—*Syn. Fung.* p. 187.—*Alb. et Schwein.* p. 102.—*De Cand. Fl. Franç.* ed. 3. v. 2. p. 256.—*Ejusd. Syn.* p. 53.—*Moug. et Nestl. St. Exsicc.* No. 490.—*Schw. in. Fung. Carol.* No. 403.—*Hook. Fl. Scot.* pt. 2. p. 13.—*Grev. Fl. Edin.* p. 455.—*Nees, Syst.* t. 10. f. 118.

STEMONITES fusca, *Trentep, in Rothii Cat. Bot.* p. 222.—*Roth. Fl. Germ.* 1. p. 448.

STEMONITES typhina, *Rehl. Fl. Cantab.* p. 575.—*Gmel. Syst. Veg.* p. 1017. fide Persoon *(non aliorum auctorum).*

STEMONITES, sp. 1. *Sled. Meth. Fung.* p. 141. t. 4.

TRICHIA axifera, *Bull. Champ.* p. 118. t. 477. f. 1.

TRICHIA nuda, *With. Bot. Arr.* ed. 6. p. 472.—*Sow. Fung.* t. 50.—*Sibth. Fl. Oxon.* No. 1146.—*Purt. Midl. Fl.* v. 2. p. 717.

CLATHRUS nudus, *Linn. Sp. Pl.* 1649.—*Bolt. Fung.* t. 93. f. 1.—*Fl. Dan.* t. 216.—*Huds. Fl. Angl.* p. 630.—*Batsch, Elench. Fung.* 1. p. 143.

EMBOLUS lacteus, *Hoffm. Veg. Crypt.* 2. p. 8. t. 2.—*Jacq. Misc.* 1. p. 137. t. 6.

CLATHROIDASTRUM obscurum majus, *Mich. Gen. Pl.* t. 94. f. 1.

HAB. On rotten wood, dead leaves, mosses, &c. frequent in autumn.

Plant fasciculated, or densely crowded, in an early state of a whitish colour, soft consistence, and oblong form. When mature the *sporangia* are very

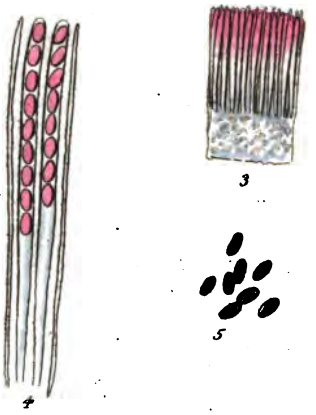
slender, cylindrical, from a quarter to nearly an inch in length, and of a dark purplish-brown colour. The *peridium* is extremely fugacious, disappearing to the very base, and leaving a cylindrical mass of beautifully reticulated woolly filaments, attached to the stipes, which penetrates to the very apex. *Stipes* black, very slender, straight, shining, varying in length. *Sporidia* exceedingly numerous, globose, among the network of the filaments. *Subjacent membrane* a very thin pellicle, pale, shining.

This is a plant of frequent occurrence, but, it is to be hoped, not the less interesting on that account, as an illustration of the genus to which it belongs. My object in this work has indeed been to introduce occasionally such plants as the botanist is likely to meet in his mycological rambles; a plan which cannot fail to excite investigation, and encourage those who are less acquainted with the delightful study of Cryptogamic vegetation, to examine more attentively the new world which they will find from day to day opening around them.

Few genera of GASTROMYCI are better defined than the present one. In some respects it approaches *Trichia*, and more nearly *Arscyria*, but is removed from both by the stipes which penetrates the sporangium.

Stemonites typhina of PERSOON has been added as a synonym to our plant by my friend Mr PURTON, and perhaps he may be right. I am too doubtful, however, on the subject, at present to follow his example.

Fig. 1. *St. fasciculata, nat. size.* Fig. 2. *Plants magnified.* Fig. 3. *A young plant.* Fig. 4. *A plant after the peridium has vanished.* Fig. 5. *Woolly filaments and sporidia.*



171. R.K. Greville omnes delin.t

W. Miller omnes sculp.t

PEZIZA COCCINEA.

Carmine Peziza.

CLASS AND ORDER CRYPTOGAMIA FUNGI, *Linn.*—NAT. ORD. *FUNGI, Link, Grev.*

SERIES II. LACHNEÆ.—TRIB. V. SARCOSCYPHÆ, *Fries.*

GENERIC CHARACTER.

Pileus stipitatus aut sessilis, plus minusve cupuliformis vel complanatus, tubulis elongatis sporuliferis in pagina superiore.

Pileus stipitate or sessile, dilated into a more or less cup-shaped or flattish receptacle, with tubular, elongated, sporuliferous cells in the upper surface or disk.

SPECIFIC CHARACTER.

PEZIZA coccinea; *cupula carnosa infundibuliformi, stipitata, extus stipiteque villo brevi appresso tomentosa albida, disco coccineo.*

P. cup fleshy, infundibuliform, stipitate, the stipes and outer surface of the cup white, clothed with a short white villosity; disk fine crimson.

PEZIZA coccinea, *Jacq. Aust.* t. 169.—*Bolt. Fung.* t. 104.—*Pers. Obs. Mycol.* 2. p. 75.—*Syn. Fung.* p. 652.—*Myc. Eur.* 1. p. 258.—*Reich. Fl. Francf.* p. 158.—*Alb. et Schwein.* p. 323.—*Nees, Syst.* t. 38. f. 288.—*Winch. Bot. Guide,* v. 2. p. 100.—*With. Bot. Arr.* ed. 6. v. 4. p. 417.—*Fries, Syst.* v. 2. p. 79.—*Grev. Fl. Edin.* p. 421.

PEZIZA epidendra, *Bull. Champ.* t. 467.—*Sow. Fung.* t. 13.—*De Cand. Fl. Franç.* ed. 3. v. 2. p. 85.—*Ejusd. Syn.* p. 18.—*Rehl. Fl. Cantab.* ed. 3. p. 554.—*Sibth. Fl. Oxon.* No. 1086.—*Purt. Midl. Fl.* v. 2. p. 686.

PEZIZA cyathoides, *Lightf. Fl. Scot.* p. 1052. in part.

PEZIZA poculiformis, *Hoffm. Crypt.* p. 27. t. 7. f. 5.

PEZIZA Acetabulum coccinei intus coloris, *Dill. Giess.* p. 194.—*Batt. Elench. Fung.* p. 27. t. 3. f. n, o.—*Raii, Syn.* p. 19. No. 13.

ELVELLA coccinea, *Scop. Fl. Carniol.* p. 479.

HAB. On rotten branches of trees, slightly covered with soil, in damp and shady places, not unfrequent, throughout the kingdom. Woods in Dryfesdale, Dumfriesshire, abundant, Sir WILLIAM JARDINE, Bart. Appin, Captain CARMICHAEL. Roslyn Woods, January to May.

Cup half an inch to two inches broad, funnel-shaped, fleshy, fine carmine colour within, slightly crenate at the margin, which, in the young state,

is connivent, and submembranaceous. *Stipes* tapering downwards gradually from the cup, half an inch to an inch in length, firm, solid. The *exterior* of both cup and stipes is whitish, and covered with a short tomentose substance. *Sporidia* large oval, mostly eight in each tubular cell (or theca).

Peziza coccinea is really entitled to be called a splendid fungus, and, in point of beauty, to be placed first on a list of above 330 species, many of which are of exquisite form and colour. The interior of the cup is of the finest carmine, the outer surface white and tomentose. Without much poetical exaggeration, this beautiful *Peziza* seems to be clothed with a fur robe, lined with the richest velvet. So striking, indeed, is its appearance, that I have had specimens brought to me by individuals of the lower classes, solely on account of the splendour of their colour.

It is a variable plant in regard to size. The larger figures on the plate exceed considerably the usual dimensions, though in favourable situations I have seen them more than once equally luxuriant.

LIGHTFOOT, in whose Flora I find the first notice of its being a Scottish plant, has evidently two species confounded together, our present one and P. *aurantia:* this fact my friend Mr PURTON has noticed in his Midland Flora.

Fig. 1. *Plants in different stages of growth, natural size.* Fig. 2. *A plant divided.* Fig. 3. *A small portion of the hymenium.* Fig. 4. *Thecæ.* Fig. 5. *Sporidia.—The three last magnified.*

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TRICHOTHECIUM ROSEUM.

Rose-coloured Trichothecium.

CLASS AND ORDER CRYPTOGAMIA FUNGI, *Linn.*—NAT. ORD. *BYSSOIDEÆ, Grev.*—MUCEDINES, *Link.*

GENERIC CHARACTER.

Thallus dense cæspitosus, floccosus; floccis ramosis, intricatis, decumbentibus. Sporidia ovalia didyma.

Thallus densely cæspitose, filamentous; the flocci (or filaments) branched, entangled, decumbent. Sporidia oval, 2-celled.

SPECIFIC CHARACTER.

TRICHOTHECIUM roseum; *floccis albidis, sporidiis copiosissimis, roseis.*

T. woolly filaments white, sporidia very abundant, rose-coloured.

TRICHOTHECIUM roseum, *Link, in Berl. Mag.* v. 3. p. 18. t. 1. f. 27.—*Nees, Syst.* t. 3. f. 41.—*Grev. Fl. Edin.* p. 465.

TRICHODERMA roseum, *Pers. Disp. Meth. Fung.* p. 92.—*Syn. Fung.* p. 231.—*Hoffm. Fl. Germ.* 2. t. 10. f. 1. *fide Pers.*—*Alb. et Schwein.* p. 135.

HAB. On rotten branches of trees, and even putrefying vegetables, chiefly in the spring, but occasionally all the year. Frequent.

Thallus in small tufts 1–3 lines broad, about a line high, roundish, at first distinct, often becoming confluent, composed of a mass of entangled, white, branched, articulated, pellucid, woolly filaments. *Sporidia* rose-coloured, very numerous, large, oval, 2-celled, scattered among the filaments, and eventually rendering the whole mass of a reddish colour.

This pretty little plant was separated from *Trichoderma*, and constituted the type of a distinct genus, by that acute botanist Professor LINK.

I have in vain sought for this genus, as well as for *Trichoderma*, in the first Section (all that is at present published), of PERSOON's Mycologia Europæa. Nor can I conceive in what part of his system he intends to place them, unless, perhaps, as

in his Synopsis, among the *Gastromyci*, on account of the filaments being woven in the early state into a kind of lax web over the sporidia. Should this be the case, they will be removed to a distance from all the genera most nearly allied to them.

Fig. 1. *T. roseum, nat. size, on a portion of a dead branch.* Fig. 2. *Filaments and sporidia, magnified.*

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AGARICUS PHLEBOPHORUS?

Wrinkled Agaric.

CLASS AND ORDER CRYPTOGAMIA FUNGI, *Linn.*—NAT. ORD. *FUNGI, Link, Grev.*

SERIES II. DIV. XIV. CLITOPILUS, *Fries.*—SECT. III. GYMNOPUS, *Pers.*

GENERIC CHARACTER.

Pileus stipitatus aut latere affixus, subtus lamellis sporuliferis rectis simplicibus. Volva nulla.

Pileus furnished with a stipes or fixed by its side, having on the under surface straight, simple, sporuliferous lamellæ. Volva none.

SPECIFIC CHARACTER.

AGARICUS phlebophorus? *pileo vix subcarnoso, glabro, convexo-explanato, olivaceo-umbrino, venoso-rugoso; stipite subfistuloso, glabro, albido; lamellis liberis, albidis, dein carneis.*

AG. pileus scarcely subcarnose, glabrous, convex, at length plane, olivaceous brown, rugose with veins; stipes subfistulose, glabrous, whitish; lamellæ free, white, at length flesh colour.

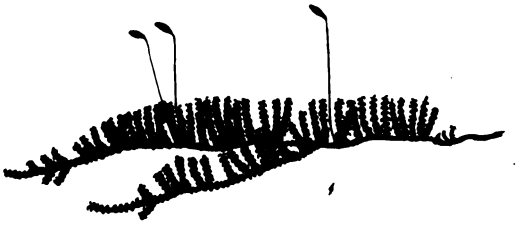
AGARICUS phlebophorus? *Ditmar, in Sturm's Deutschl. Fl. (Fungi)* t. 15.—*Nees, Syst.* t. 25. f. 202.—*Fries, Syst.* v. 1. p. 200.—*Grev. Fl. Edin.* p. 385.
AGARICUS reticulatus? *With. Bot. Arr.* ed. 6. v. 4. p. 350.

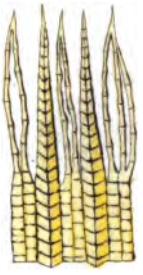
HAB. On rotten stumps, of trees, wood, &c. July to October, rare. On chips of wood and on saw-dust, in an old saw-pit at Foxhall; Captain WAUCH and Dr GREVILLE.

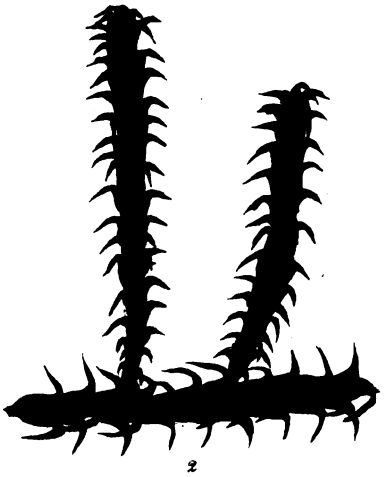
Plant somewhat gregarious, distinct, or at most two or three growing from the same base. *Pileus* one to near three inches in breadth, convex, at length nearly plane, undulated at the margin, so little fleshy as to be nearly membranaceous, yet with a firm substance. *Colour* yellowish or olivaceous brown, varying in intensity. *Surface* glabrous, rugose with veins in the direction from the centre to the circumference, which veins, when examined, seem to be folds of the epidermis. *Lamellæ* rather numerous, broad, ventricose, free, white, at length becoming rose or flesh-coloured from the rose-coloured sporules. *Stipes* 2–4 inches long, 2–5 lines thick, somewhat fistulose, whitish, mostly twisted, equal, except at the base, which is often thickened, and frequently incurved.

I regret that I am obliged to publish this plant with some degree of uncertainty, whether it be really the species named *phlebophorus* by DITMAR, or not. Though I cannot, however, refer it to any other, it is possible that it may prove to be *Ag. vascipes*, a species contained in the index to the Systema Mycologicum of FRIES, but only noticed incidentally under *Ag. phlebophorus*; yet *Ag. vascipes*, though agreeing in many respects, is said to have a striated margin, which is not present in our species.

Fig. 1. *A section, nat. size.* Fig. 2. *Sporules, magnified.*







HYPNUM HALLERI.

Haller's Feather-Moss.

CLASS AND ORDER CRYPTOGAMIA MUSCI, *Linn.*—NAT. ORD. *MUSCI, Juss. &c.*

GENERIC CHARACTER.

Seta lateralis. Peristomium duplex: ext. *e dentibus* 16*:* int. *membrana plicata* 16*-laciniata, ciliis alternantibus. Calyptra dimidiata.*—HOOK.

Fruitstalk lateral. Peristome double: the outer one of 16 teeth; the inner one of a plicate membrane cleft into 16 segments, with ciliary processes between them. Calyptra dimidiate.

SPECIFIC CHARACTER.

HYPNUM Halleri; *caule repente, pinnato, ramis brevibus, erectis; foliis omnibus recurvis, cordatis acuminatis, basi obsoletissime binervibus, apice subserrulatis; operculo obtuso-conico.*

H. stem creeping, pinnate, the branches short, erect; all the leaves recurved, cordate, acuminate, obsoletely 2-nerved at the base, subserrulate towards the apex; lid obtusely conical.

HYPNUM Halleri, *Linn. Syst. Veg.* 952.—*Hedw. St. Cr.* v. 4. p. 54. t. 21.—*Sp. Musc.* p. 279.—*Schwaegr. Supp.* II. p. 283. cum synon. Hedw.—*Web. & Mohr, Tasch.* p. 352.—*Funck, Deutschl. Moose,* p. 64. t. 49.—*Moug. et Nestl. St. Cr. Exsicc.* No. 626.—*Brid. Musc.* 3. p. 122.—*De Cand. Fl. Franç.* ed. 3. v. 2. p. 530.—*Ejusd. Syn.* p. 109.

HYPNUM caulibus prostratis, foliis lanceolatis reflexis, operculo conico, *Hall. Hist. Stirp.* III. p. 27. No. 1734.

HAB. Rocks on Ben Lawers, extremely rare. Messrs HOOKER, ARNOTT, and Greville, 1823.

Plant creeping closely on the rocks in diffused tufts, of a rich yellowish or reddish brown colour. *Stems* creeping, 2–3 inches long, generally closely pinnated with erect branches 3–5 lines in length, the ends often nearly simple for half an inch or more. *Leaves* numerous, all of them recurved, closely imbricated at their bases, cordate or broadly ovate, acuminate, very indistinctly 2-nerved at the base, subentire or slightly serrulate towards the apex. *Perichætial ones* imbricated, erect, lanceolato-acuminate. *Seta* about three quarters of an inch in length. *Capsule* ovate, cernuous; *lid* conical. *Inner peristome* with the alternating ciliæ connate at the apex.

Hypnum Halleri cannot be considered otherwise than in the light of a very interesting addition to the British Flora, and not unlikely to remain a rare plant. I mentioned under H. *dimorphum* (at t. 160. of this work), that it was my enviable lot to discover this species on a rock on Ben Lawers, in an excursion to that mountain along with my friends Dr HOOKER and Mr WALKER ARNOTT. It is not necessary to repeat my observations respecting the distinctive marks between this species and H. *dimorphum*; but equally satisfactory characters must be found to separate it from H. *stellatum*. This latter moss resembles H. ***Halleri*** in habit only in its smallest varieties, and even then not very nearly; so that there can be little difficulty in distinguishing the two plants with the naked eye. Under the microscope, the main discrepancies seem to be, that ***Hypn. stellatum*** has the leaves loosely set from their very base, and quite entire; the stem is moreover irregularly divided, scarcely ever creeping, the ramuli very irregular both in position and length; and the lid of the capsule acutely conical. ***Hypn. Halleri***, on the other hand, has the leaves closely imbricated at their base, their upper half being recurved, and slightly serrulate; the branches always short and erect; and the lid of the capsule conical, but with the apex obtuse.

Fig. 1. *H. Halleri, nat. size.* Fig. 2. *Portion of the stem, with two branches, magnified.* Fig. 3. *Perichætium, fruitstalk, capsule and lid.* Fig. 4. *Leaves.* Fig. 5. *Two of the outer teeth of the peristome.* Fig. 6. *Portion of the inner peristome.—All the figures magnified, except* Fig. 1.

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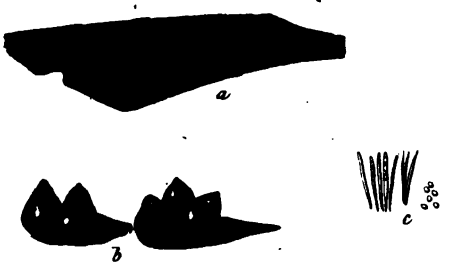

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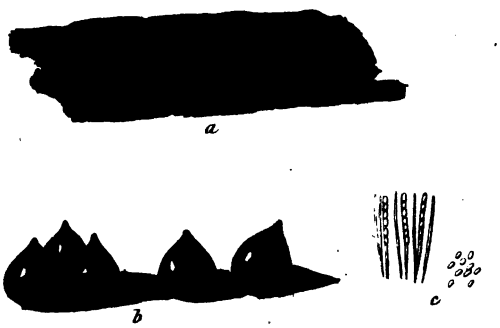


SPHÆRIA SANGUINEA.

Orange-red Sphæria.

CLASS AND ORDER CRYPTOGAMIA FUNGI, *Linn.*—NAT. ORD. *HYPOXYLA, De Cand. Grev.*

GENERIC CHARACTER.

Receptaculum 0. *Perithecia cornea, libera, sessiles aut subimmersa, sparsa vel congesta, ore interdum elongato, aliquando nullo; intus massa gelatinosa sporulifera instructa.*

Receptacle 0. Perithecia corneous, free, sessile or somewhat immersed, scattered or crowded, the mouth sometimes elongated, at others wanting. Interior filled with a gelatinous sporuliferous mass.

SPECIFIC CHARACTER.

SPHÆRIA sanguinea; *sessilis, minuta, sparsa, mollis, peritheciis ovatis, rarius subglobosis, lævibus, papillatis, aurantiaco-sanguineis.*

SPH. sessile, minute, scattered, of a soft substance; perithecia ovate, rarely subglobose, smooth, orange-red, orifice papillate.

SPHÆRIA sanguinea, *Sibth. Fl. Ox.* p. 404.—*Bolt. Fung.* t. 121. f. 1.—*Sow. Fung.* t. 254. (?)—*Pers. Syn. Fung.* p. 81.—*With. Bot. Arr.* ed. 6. v. 4. p. 464.—*Relh. Fl. Cant.* ed. 3. p. 572.—*Wahl. Fl. Lapp.* p. 521.—*De Cand. Fl. Franç.* ed. 3. v. 2. p. 297.—*Ejusd. Syn.* p. 62.—*Winch, Bot. Guide,* v. 2. p. 107.—*Purt. Midl. Fl.* v. 3. p. 279.—*Schwein. Fung. Carol.* No. 197.—*Nees, Syst.* t. 44. f. 360.—*Fries, Syst.* v. 2. p. 453.—*Scl. Suec. Exsicc.* No. 264. & 127.

SPHÆRIA erythrococcos, *Ehrenb. Ber.* p. 29.

HYPOXYLON phœniceum, *Bull. Champ.* p. 171. t. 487. f. 3.

HAB. On wood, branches of trees, &c. in the spring. Frequent. About Edinburgh.

Perithecia (or spherules) very minute, sessile, scattered, or occasionally in groups of few together, ovate, with a minute, papillate orifice, smooth, somewhat shining and of a waxy appearance, and soft substance. *Sporidia* roundish.

This species most commonly occurs on bare wood, as fallen trees deprived of their bark, &c. There is a variety, however, which occurs on dead *Stromatosphæriæ*, in a more aggregated form: this is of a roundish figure, and must not be confounded with S. *episphæria*.

Fig. 1. a, *Sphæria sanguinea, nat. size.* b, *Perithecia, magnified.* c, *Thecæ and Sporidia,*

SPHÆRIA EPISPHÆRIA.

Red Parasitic Sphæria.

SPECIFIC CHARACTER.

SPHÆRIA episphæria; *sessilis, minuta, mollis, aggregata vel sparsa, lævis, sanguinea, perithecüs subglobosis, collabescentibus, ostiolo papilliformi.*

SPH. sessile, minute, soft, aggregated or scattered, smooth, blood-red, perithecia subglobose, collapsing, the orifice papilliform.

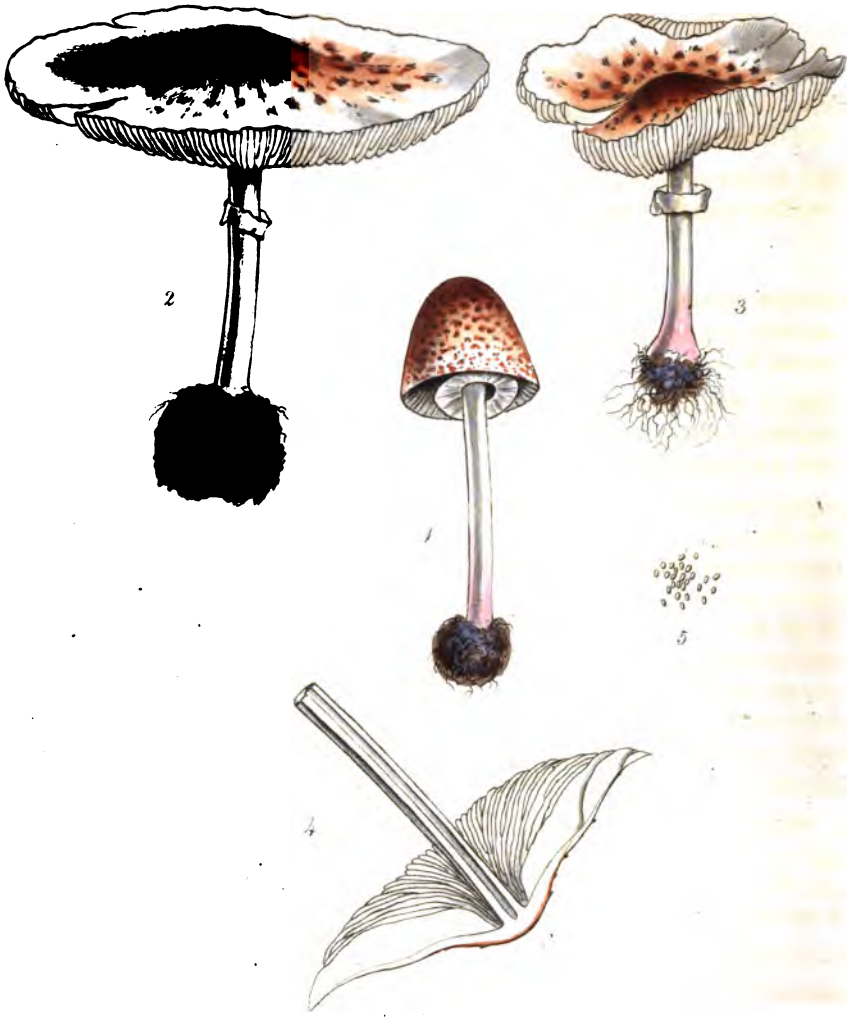
SPHÆRIA episphæria, *Tode, Fung.* 2. p. 21. f. 89.—*Pers. Syn. Fung.* p. 57.—*Alb. et Schwein.* p. 28.—*De Cand. Fl. Franç.* v. 6. p. 142.—*Nees, Syst.* t. 43. f. 351.—*Fries, in Vet. Ac. Handl.* 1818, p. 116.—*Syst. Mycol.* v. 2. p. 454.—*Scler. Suec.* No. 265.—*Schwein. Fung. Carol.* No. 140.

HAB. On *Stromatosphæria stigma, decorticans,* &c. Winter and spring. Lasswade, and elsewhere near Edinburgh.

Perithecia sessile upon the surface of several species of *Stromatosphæria,* scattered or somewhat aggregated, very minute, of a soft substance, subglobose, becoming depressed, or even collapsed, blood-red, orifice larger than in *Sph. sanguinea,* papilliform. *Theoæ* filiform, elongated, containing 4–7 oval-oblong sporidia.

I believe this brilliant little *Sphæria* is never found except upon a few species of *Hypoxyla,* which FRIES refers to the same genus with itself, but which I have denominated *Stromatosphæriæ.* There cannot be a greater contrast than between the sombre unattractive hue and appearance of the latter and the lively colour and berry-like form of its minute parasite.

Fig. 2. a, *Sph. episphæria, on Stromatosphæria decorticans, nat. size.* b, *Perithecia, magnified.* c, *Theoæ and Sporidia.*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AGARICUS CRISTATUS.

Pale crested Agaric.

CLASS AND ORDER CRYPTOGAMIA FUNGI, *Linn.*—NAT. ORD. *FUNGI, Link, Grev.*

SERIES I. TRIB. II. LEPIOTA, *Fries.*—SECT. I. LEPIOTA, *Pers.*

GENERIC CHARACTER.

Pileus stipitatus aut latere affixus, subtus lamellis sporiferis, rectis, simplicibus. Volva nulla.

Pileus furnished with a stipes, or fixed by its side; bearing on the under surface straight, simple, sporuliferous lamellæ.

SPECIFIC CHARACTER.

AGARICUS cristatus; *graveolens, pileo demum explanato, umbonato, pilei epidermide in squamas secedente, lamellis liberis, albidis; stipite lævi, fistuloso, annulo fugaci.*

AG. odour disagreeable, pileus at length plane, umbonate, the epidermis cracking off in small scales; lamellæ free, white; stipes smooth, hollow; veil a fugacious ring.

AGARICUS cristatus, *Bolt. Fung.* t. 7.—*Fries, Syst. Mycol.* v. 1. p. 22.—*Grev. Fl. Edin.* p. 370.

AGARICUS colubrinus, var. γ, *Pers. Syn. Fung.* p. 259.

AGARICUS clypeolarius, *Purt. Midl. Fl.* v. 3. p. 420. *quoad synon. Ag. cristati. With. Bot. Arr.* ed. 6. v. 4. p. 336. var. 3.

AGARICUS conspurcatus, *Willd. Fl. Berol.* p. 382. *fide Fries.*

AGARICUS subantiquatus, *Batsch. Elench. Fung. Cont.* 2. f. 205.

FUNGUS squamis fuscis ferrugineis, *Mich. Gen. Nov. Pl.* t. 78. f. 8.

FUNGUS minimus, albus, pileolo leviter fastigiato, pediculo cylindrico, tenuiori, annulato, fistuloso, *Mich.* l. c. t. 78. f. 7.

HAB. Shady places among grass and moss, frequently also on bare spots, and mostly on a sandy soil. Autumn. Foxhall, near the river side, Captain WAUCH. In the garden of American Plants at Millburn, the seat of the Right Honourable Sir ROBERT LISTON.

Plant scattered, having a taste and smell strong and unpleasant. *Pileus* obtusely conical when young, gradually expanding, and at length becoming quite plane or even somewhat turned upwards at the margin, the centre remaining umbonate. The *epidermis* cracks into a great number of minute reddish scales, which vanish towards the edge, leaving that part nearly quite white, while towards the centre the scales being

smaller and more contiguous, it is of a deeper hue. *Flesh* very thin, white. At its full growth, the pileus is from three quarters of an inch to two inches in breadth. *Lamellæ* moderately numerous, white, 2–4 in a set, rather narrow, their edge uneven, often splitting, free, and leaving a channel between them and the stipes. *Stipes* one to near two inches in height, about two lines in diameter, often less, whitish or pinkish, fistulose, smooth. *Veil* separating early from the pileus, and forming a more or less imperfect ring, which is subfugacious. *Root* a mass of white, branching fibres, and of considerable tenacity, and generally retaining a quantity of soil.

This is a very charming though small species, presenting a beautiful contrast between the silky whiteness of the substance of the pileus, and the pinkish-brown scales, the colour of which deepens insensibly to the very apex. It has, besides, the recommendation of drying extremely well, under moderate pressure.

From the *Agaricus clypeolarius* it is chiefly distinguished by its peculiar taste and smell, and smooth stipes.

Fig. 1. *A young plant.* Fig. 2. *A mature plant.* Fig. 3. *An old plant.* Fig. 4. *A section.* Fig. 5. *Sporidia.—The last only magnified.*

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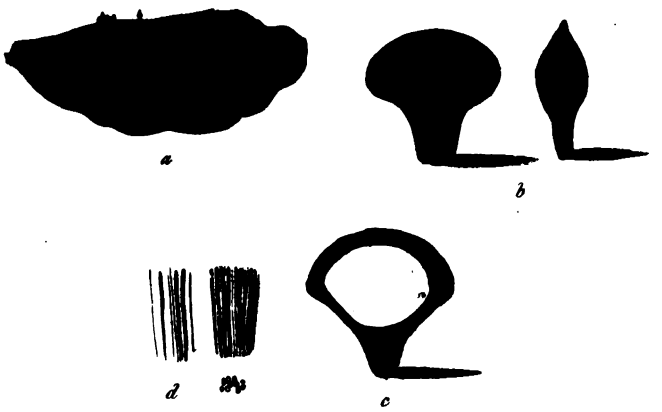

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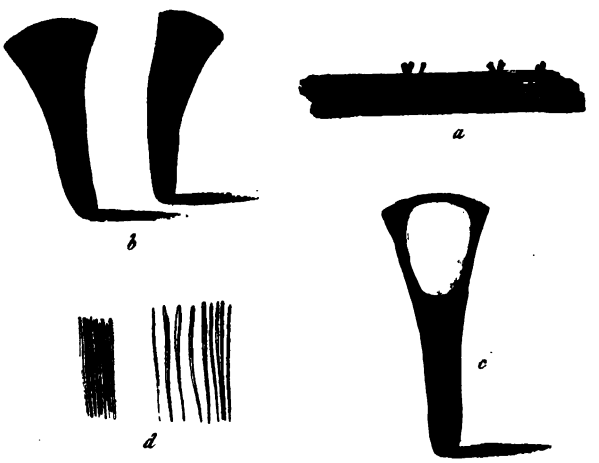


LOPHIUM MYTILINUM.

Shell-like Lophium.

CLASS AND ORDER CRYPTOGAMIA FUNGI, *Linn.*—NAT. ORD. *HYPOXYLA, De Cand. Grev.*

GENERIC CHARACTER.

Perithecia verticalia compressa, clausa, rima longitudinali dehiscentia. Nucleus ex ascis erectis, sporidia exigua includentibus, mox in pulverem fatiscens evacuatus.

Perithecia vertical, compressed, closed, opening at length by a longitudinal cleft; containing a nucleus of erect tubes, inclosing minute sporidia, at length becoming pulverulent and escaping.

SPECIFIC CHARACTER.

LOPHIUM mytilinum; *perithecio brevi-pedicellato, sursum valde dilatato, transversim striato, atronitente.*

L. Perithecium shortly pedicellate, much dilated upwards, transversely striated, black, shining.

LOPHIUM mytilinum, *Fries, in Vet. Ac. Handl.* 1818, p. 116.—*Scler. Suec. Exsicc.* No. 60.—*Syst. Mycol.* v. 2. p. 534.

HYSTERIUM mytilinum, *Pers. Syn. Fung.* p. 97.—*Alb. et Schwein.* p. 54.—*Nees, Syst.* t. 39. f. 301.—*Schwein. Fung. Carol.* No. 236.

HYSTERIUM ostraceum, *De Cand. Fl. Franç.* ed. 3. v. 2. p. 306.—*Ejusd. Syn.* p. 64.

HYPOXYLON ostraceum, *Bull. Champ.* p. 170. t. 444. f. 4.

HAB. On the bark, or denudated wood, chiefly of Fir-trees, rare. Appin, Captain CARMICHAEL.

Perithecia sometimes placed on a very thin blackish crust, sometimes quite destitute of it, very small, one-third, or scarcely half a line in breadth, and about the same in height, very shortly stipitate, the stipes dilating immediately into the body of the perithecium, which is very compressed, vertical, sharp at the edge like an axe, of a shining black, and marked on each side with transverse lines. The whole most remarkably resembling a black bivalve shell in miniature. The substance is thin and brittle; interior mass, or nucleus of fructification, of a whitish colour, and composed of erect filiform *thecæ*, mixed with filaments *(paraphyses)*, at length becoming pulverulent, and evacuating the perithecium. *Sporidia* very minute, roundish.

For this and the following species of a highly curious genus, I am indebted to my excellent friend Captain CARMICHAEL, to whom belongs the merit of introducing them to the British

Flora. The one we have just described, bears a singular resemblance to a bivalve shell, and was thence named *ostraceum* by BULLIARD, and *mytilinum* by PERSOON. The latter appellation certainly ought to have been rejected, in favour of the older and equally appropriate one, had it not been so universally received. PERSOON and NEES AB ESENBECK have placed it in the genus *Hysterium;* but FRIES has separated it, and bestowed upon it and one other species the generic name of *Lophium*, which is here adopted.

SOWERBY, in his valuable work on English Fungi, has figured a plant which he has named *Sphæria ostracea*, and has referred to BULLIARD'S figure. It is certain, however, that SOWERBY'S figure must be referable to something else, as it does not in the least resemble our plant, is very many times larger, and is transversely dehiscent, and therefore resembling (as FRIES observes) the genus *Eustegia* in habit.

Fig. 1. a, *L. mytilinum, nat. size.* b, *Perithecia, magnified.* c, *A perithecium vertically divided.* d, *Thecæ and sporules.—All magnified except* Fig. 1.

LOPHIUM ELATUM.

Elongated Lophium.

SPECIFIC CHARACTER.

LOPHIUM elatum; *stipitatum, compressum, nigrum, transversim striatum, ex stipite, in perithecio elongato cuneiforme dilatatum.*

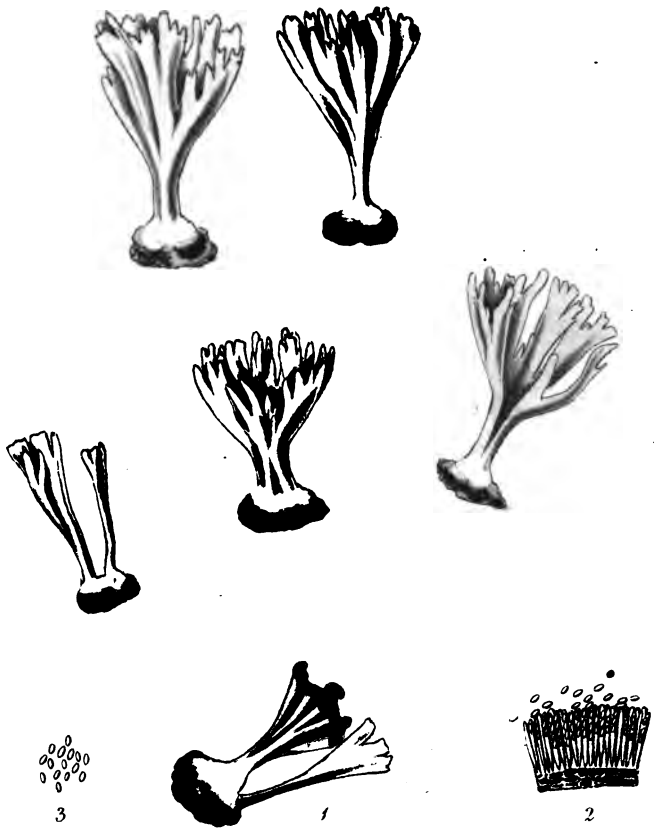
L. stipitate, compressed, black, transversely striated, dilated gradually from the stipes into an elongated wedge-shaped perithecium.

HYSTERIUM elatum, *Carm.* MSS.

Perithecia, in my specimen, not placed upon a crust; black, erect, about a line high, stipitate; the stalk nearly cylindrical at the base, very gradually dilating and passing into the compressed, transversely striated, black, wedge-shaped perithecium: the whole very similar to the head of a long-shaped hatchet. *Thecæ* long, filiform, intermixed with barren filaments *(paraphyses)*, and containing a few very minute *sporidia.*

This species appears to be exceedingly distinct, and to retain the characters of the genus in a most satisfactory manner.

Fig. 2. a, *L. elatum, nat. size.* b, *Perithecia, magnified.* c, *A perithecium divided.* d, *Thecæ.—All but the first magnified.*



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MERISMA TUBEROSUM.

Dwarf tuberous Merisma.

CLASS AND ORDER CRYPTOGAMIA FUNGI, *Linn.*—NAT. ORD. *FUNGI, Link, Grev.*

GENERIC CHARACTER.

Pileus subcrustaceus vel stipitatus, ramosus, coriaceus, ramis complanatis, dilatatis, laciniatis. Hymenium omnem fere superficiem utrinque occupans, cum stipite valde confusum.

Pileus somewhat crustaceous or stipitate, branched, coriaceous; branches compressed, dilated, laciniate. Hymenium covering almost the whole surface on every side, and passing insensibly into the stipes.

SPECIFIC CHARACTER.

MERISMA tuberosum; *erectum, distinctum, stipitatum, griseo-rufescens; pileo ramis longitudinale subæqualibus, laciniatis; stipite basi bulboso.*

M. erect, distinct, stipitate, colour reddish-grey: pileus composed of laciniated branches of nearly equal length: stipes bulbous at the base.

HAB. On the ground in bare places, in autumn. Foxhall, Captain WAUCH.

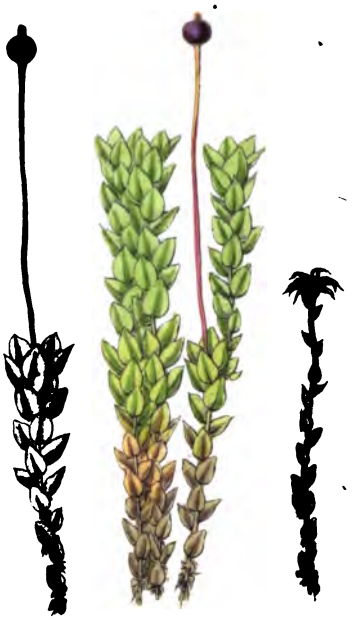
Plant scattered, of a grey colour, mostly with a slight brownish tinge, of a firm subcoriaceous substance, about an inch in height. *Pileus* about two-thirds of the height of the entire plant, variously divided into a good many compressed, laciniated branches, terminating acutely or obtusely. The main branches are generally given off from the same point, and are disposed in a circular manner, leaving the centre free, and somewhat infundibuliform. *Stipes* nearly cylindrical, obscurely furrowed or lacunose, and bulbous at the base. *Hymenium* covering the whole plant except the stipes. *Sporidia* oval, very numerous.

My friend Captain WAUCH was the discoverer of the present species nearly two years ago, when he was kind enough to communicate the specimens to me from which the accompanying drawing and descriptions were made. I have since had the pleasure of seeing the plant growing, and retaining its characters in size, colour, and every other peculiarity.

This species seems to mark more strikingly than any other I have yet seen, the difference between the genera *Merisma* and

Thelephora; and I cannot help continuing to rank this as one of the very few instances in which I find reason to dissent from my esteemed friend M. FRIES.

Fig. 1. *A plant transversely divided.* Fig. 2. *Thecæ and Sporidia.* Fig. 3. *Sporidia.—The two last magnified. The other figures represent the plant in different states, and of the natural size.*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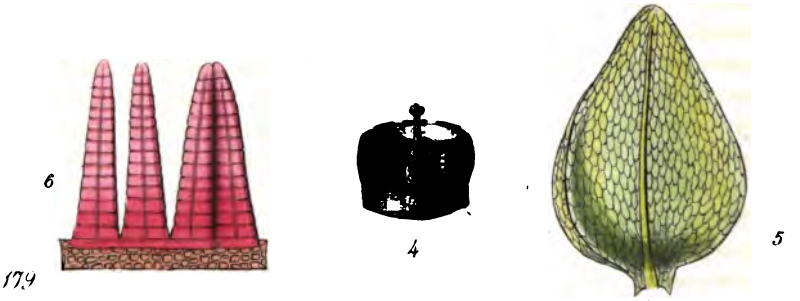
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SPLACHNUM VASCULOSUM.

Obtuse-leaved Splachnum.

CLASS AND ORDER CRYPTOGAMIA MUSCI, *Linn.*—NAT. ORD. *MUSCI, Juss. &c.*

GENERIC CHARACTER.

Seta terminalis. Theca apophysata. Peristomium simplex, e dentibus geminantibus siccitate arcte reflexis. Columella apice dilatata. Calyptra lævis, basi integra, fugax.

Fruitstalk terminal. Capsule with an apophysis. Peristome simple, of geminating teeth, closely reflexed when dry. Columella dilated at the apex. Calyptra even, entire at the base, fugacious.

SPECIFIC CHARACTER.

SPLACHNUM vasculosum; *foliis rhombo-ovatis, obtusis; apophysi globosa, demum rugosa.*

SP. Leaves rhombo-ovate, obtuse; apophysis globose, at length rugose.

SPLACHNUM vasculosum, *Hedw. St. Cr.* v. 2. t. 15.—*Sp. Musc.* p. 53.—*Wahl. Fl. Lapp.* p. 308.—*Schwaegr. Suppl.* I. p. 51.—*Web. & Mohr, Tasch.* p. 100.—*Hook. & Tayl. Musc. Brit.* p. 21. t. 1. (Suppl.)—*Fl. Scot.* pt. 2. p. 125.—*Funck, Deutschl. Moose,* p. 10. t. 7. (spec. wanting in my copy).

HAB. Moist springy places on the mountains, rare. Spring. "Scotland," Mr G. DON. Ben Lawers, Mr J. T. MACKAY. Ben More, Dr HOOKER and W. C. TREVELYAN, Esq. On Ben Lawers, it has been since repeatedly found, by Dr HOOKER, Mr WALKER ARNOTT, and Dr GREVILLE; and on the Clova Mountains by the first and last of these gentlemen, along with WILLIAM BURCHELL, Esq.

Plant of a pale, rather yellowish, but bright green colour, growing in extensive tufts about the origin of springs, and similar places on the mountains. *Stems* from one to three inches in length or more, simple, or about once divided, often branched towards the apex by innovations, slender, pale green, succulent. *Leaves* nearly spreading, rhombo-ovate, more or less obtuse at the apex, entire, highly vasculose, concave, the nerve disappearing below the summit. They are placed remotely on the stem, and, when moist, have a peculiar crispness and pellucid appearance. *Fruitstalk* one to two inches in length, rather thick, succulent, varying in colour from pale green to pink. *Capsule* cylindrical, brown, the *apophysis* globose, as large as a coriander-seed, deep reddish-purple, corrugated in age. *Lid* convex, similar in colour to the capsule. *Peristome* composed of either 8 equidistant, bigeminated teeth, or of 16 unigeminated teeth, geminating in pairs. *Columella* exserted, capitate.

The *sterile* plants, producing disciform flowers, have the leaves on the stem smaller and more distant, while those surrounding the terminating *disk* are aggregated, narrow, and elongated in a radiating direction.

I feel peculiar pleasure in being able to devote a plate to the illustration of this noble moss, which, probably on account of its former extreme rarity, has not found a place in "English Botany." On several of the mountains of Scotland, however, it does not prove so rare as might be expected, as Dr HOOKER and myself, and other gentlemen, have met with it in considerable abundance, though not always in fructification. On Ben More, a mountain not very favourable to vegetation, Dr HOOKER, accompanied by Mr TREVELYAN, found it, in his annual excursion with his students, in such profusion that a space of some yards was completely covered with it; and I have often seen it in a barren state extending several feet in one uniform tuft.

In conjunction with Mr WALKER ARNOTT, I have expressed it as my opinion, that *Splachnum rugosum* of DICKSON, as given on the authority of SMITH and the figure in English Botany, is a distinct species*. This we are also inclined to do, from two other circumstances; namely, from WEBER and MOHR having taken it up, and from having ourselves gathered specimens of the very plant itself on the higher parts of Ben Lawers. The figure in "English Botany" of this moss is extremely characteristic; and it is only with a view of confirming the species that I propose to myself the pleasure of giving a second and early figure of it. In justice to the able authors of "Muscologia Britannica," it is necessary to state, that the specimens they received from DICKSON himself, did not agree with the "English Botany" figure, but proved to be the true S. *vasculosum;* this is sufficient to account for the absence of S. *rugosum* in their excellent work.

Fig. 1. *Fertile plants, nat. size.* Fig. 2. *Sterile plant, with the discoiform flower, ditto.* Fig. 3. *Capsule, with the lid, and corrugated apophysis.* Fig. 4. *Summit of the capsule, the lid being removed, showing the peristome and columella in the dry state.* Fig. 5. *Leaf.* Fig. 6. *Four of the unigeminate teeth.—All but the two first magnified.*

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* GREVILLE and ARNOTT on the *Splachnoidea*, *Wern. Trans.* v. 5. p. 459.

1
2
3

ÆCIDIUM CORNUTUM.

Horn-like Æcidium.

CLASS AND ORDER CRYPTOGAMIA FUNGI, *Linn.*—NAT. ORD. *GASTROMYCI, Grev.*—EPIPHYTÆ, *Link.*

GENERIC CHARACTER.

Peridia in foliis vivis parasitica, membranacea, apice dehiscentia, ore dentato vel lacerato. Sporidia globosa, minutissima, libera, pulverulenta.

Peridia parasitic on living leaves, membranaceous, bursting at the apex, the orifice dentate or torn. Sporidia very minute, pulverulent.

SPECIFIC CHARACTER.

ÆCIDIUM cornutum; *peridiis ex maculo aurantiaco incrassato erumpentibus, longissimis curvatis pallide bruneis; sporidiis subglobosis.*

Æ. Peridia very long, curved, pale brown, bursting from an orange-coloured thickened spot. Sporidia subglobose.

ÆCIDIUM cornutum, *Pers. Obs. Mycol.* 2. p. 4. t. 4. f. 2, 3.—*Syn. Fung.* p. 205. *Alb. et Schwein.* p. 115.—*De Cand. Fl. Franç.* ed. 3. v. 2. p. 247.—*Ejusd. Syn.* p. 51.—*Wahl. Fl. Lapp.* p. 525.—*Sow. Engl. Fung.* t. 319.—*Gmel. Syst. Nat.* 2. p. 1472.—*Moug. et Nestl. St. Exsicc.* No. 183.—*Schmidt et Kunze, Deutschl. Schwaem.* No. 110.—*Hook. Fl. Scot.* pt. 2. p. 14.—*Grev. Fl. Edin.* p. 447.

LYCOPERDON corniferum, *Fl. Dan.* t. 803.

LYCOPERDON corniculatum, *Ehr. Crypt. Exsicc.* Dec. 20.

HAB. On the inferior surface of the leaves of *Sorbus Aucuparia* (the Mountain Ash), in Summer and Autumn, very frequent.

Peridia clustered, and issuing from a thickened, bright orange-coloured spot, about two lines in length, curved, slender, cylindrical, attenuated towards the apex, which is shortly lacerate. *Colour* a dilute yellowish-brown. *Sporidia* subglobose.

Æcidium cornutum is a well known and conspicuous parasite, plentifully infesting the leaves of the Mountain-Ash or Roan-Tree. It is produced on the under surface of the leaves, but its presence is denoted by a bright reddish spot on the upper surface. I have already made some observations under

Æ. Thalictri, on the genus *Roestelia* of LINK, whose generic character is,

> " Acervi sporidiorum epidermidem rumpunt forma tubulosa excrescentem. Sporidia subgloboss, libera."

Under this he brings the subject of the present description, as well as several others exactly intermediate between it and the common form of *Æcidia*. SCHMIDT and KUNZE, in their very useful work the " Deutschlands Schwaemme," have given a very different generic character for *Roestelia*, viz. " Peridium filis parallelis apice cohærentibus compositum e stromate progrediens. Pulvis farinaceus nudus." Such species as *Æcidium cancellatum* and *Æ. laceratum*, &c. whose structure is decidedly filamentous, may indeed be entitled to a separation from the other *Æcidia*.

Fig. 1. *A leaf of Sorbus Aucuparia, with Æcidium cornutum, nat. size.* Fig. 2. *Part of a cluster of peridia, magnified.* Fig. 3. *Sporidia.*

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TO THE

FIRST, SECOND, AND THIRD VOLUMES.

[*The synonymes are printed in Italics.*]

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